Superfund Records Center SITE: Wells 5+H BREAK: 3,6 OTHER: 15813

> D-583-7-5-11 Revision 1

WELLS G & H SITE REMEDIAL INVESTIGATION REPORT PART I WOBURN, MASSACHUSETTS

TDD NO. F1-8607-07 NUS JOB NO. MA11RF EPA SITE NO. MAD980732168 CONTRACT NO. 68-01-6699

VOLUME III: APPENDICES A & B

FOR THE

REGION I
US EPA
WASTE MANAGEMENT DIVISION

OCTOBER 17, 1986

NUS CORPORATION SUPERFUND DIVISION

SUBMITTED BY

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APPENDIX A SCOPE OF WORK FOR NUS/FIT REMEDIAL INVESTIGATION

SCOPE OF WORK
FOR A
REMEDIAL INVESTIGATION AT
WELLS G & H SITE
WOBURN, MASSACHUSETTS

TDD NO. F1-8405-02 NUS JOB NO. MA 11 EPA SITE NO. MAD 980 732 168 CONTRACT NO. 68-01-6699

FOR THE

REGION I US EPA MA/CT/VT SITE RESPONSE SECTION

October 19, 1984

NUS CORPORATION SUPERFUND DIVISION

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Date of Assignment: October 19, 1984

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NOTICE

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1.0 INTRODUCTION

The NUS Region I Field Investigation Team (NUS/FIT) has been tasked by the Region I EPA MA/CT/VT Site Response Section (EPA) under Technical Directive Document (TDD) Nos. F1-8311-06 and F1-8405-02 to conduct a Remedial Investigation (RI) of the Wells G & H Site in Woburn, Massachusetts (Appendix A).

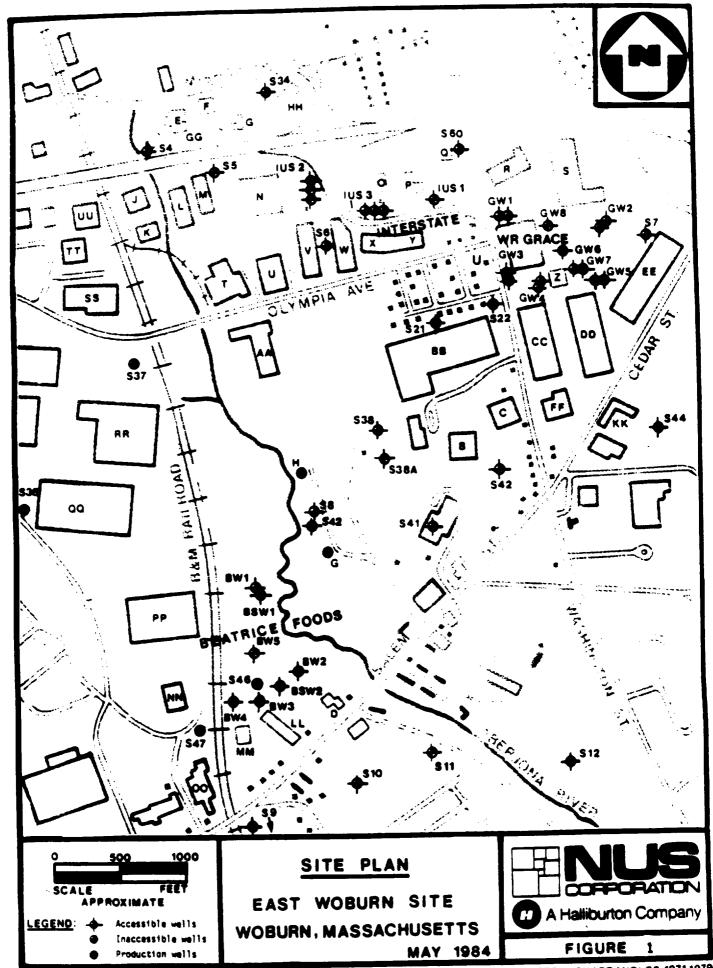
The Remedial Investigation will be in support of a Feasibility Study (FS) being conducted by GCA Corporation of Bedford, Massachusetts, under contract to EPA. This document presents the Scope of Work for the Remedial Investigation and incorporates extensive review by EPA and Massachusetts Division of Environmental Ouality Engineering (DEQE).

1.1 Background

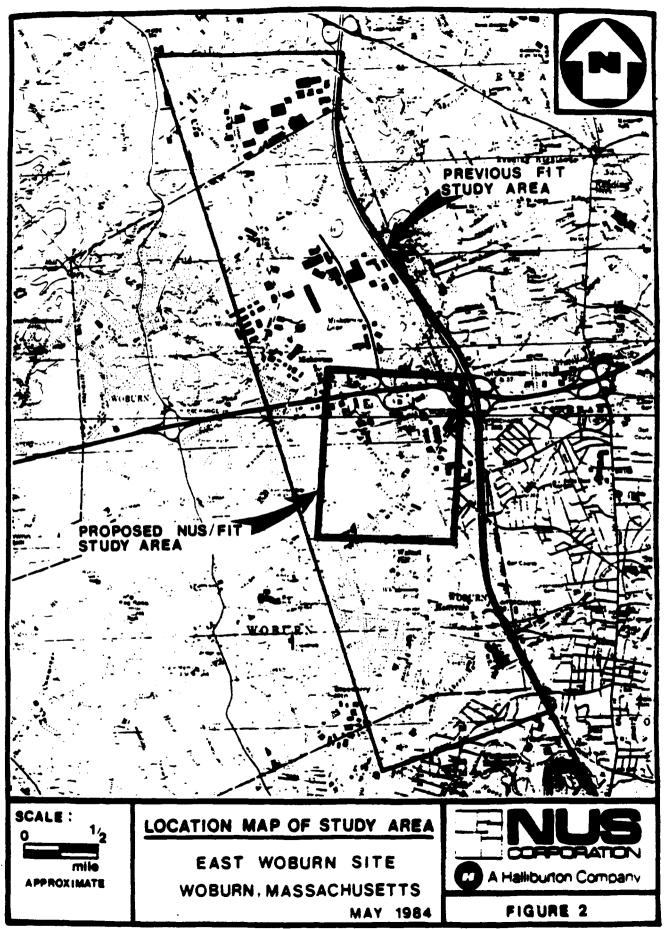
In May 1979, several chorinated volatile organic compounds (1,1,1-trichloroethane, 1,2-trans-dichlorethylene, tetrachloroethylene, trichloroethylene, chloroform, and trichlorotrifluoroethane) were detected at concentrations ranging from 1-400 parts per billion by the DEQE in the City of Woburn's municipal drinking water Wells G & H (Figure 1). Wells G & H were subsequently shut down, forcing the City of Woburn to use MDC water to supplement its other groundwater wells (1).

As a result of the detected contamination, the previous FIT contractor, Ecology and Environment Inc. (E & E), was tasked by EPA to conduct a hydrogeologic investigation and groundwater quality evaluation of a ten square mile portion of East and North Woburn (Figure 2, 3). E & E's work identified that the major groundwater problem within the study area was widespread contamination by chorinated volatile organic compounds. The volatile compounds found in highest concentration were trichloroethylene, 1,2-trans-dichloroethylene, 1,1,1-trichloroethylene, and tetrachloroethylene.

The highest concentrations (>300 ppb) of trichloroethylene and 1,2-transdichloroethylene were detected at well 5-21 and well 5-46 (Figure 1). Well 5-46



BASE MAP DERIVED FROM U.S.G.S. LEXINGTON, BOSTON NORTH, READING & WILMINGTON QUADRANGLES 1971.1979 & 1980 AERIAL PHOTOGRAPHS OF EAST WOBURN, MA



BASE MAP IS A PORTION OF THE U.S.G.S. LEXINGTON BOSTON NOPTH READING & WILMINGTON QUADRANGLE 17.5 SERIES. 1971 1975:

KEY FOR FIGURE 1

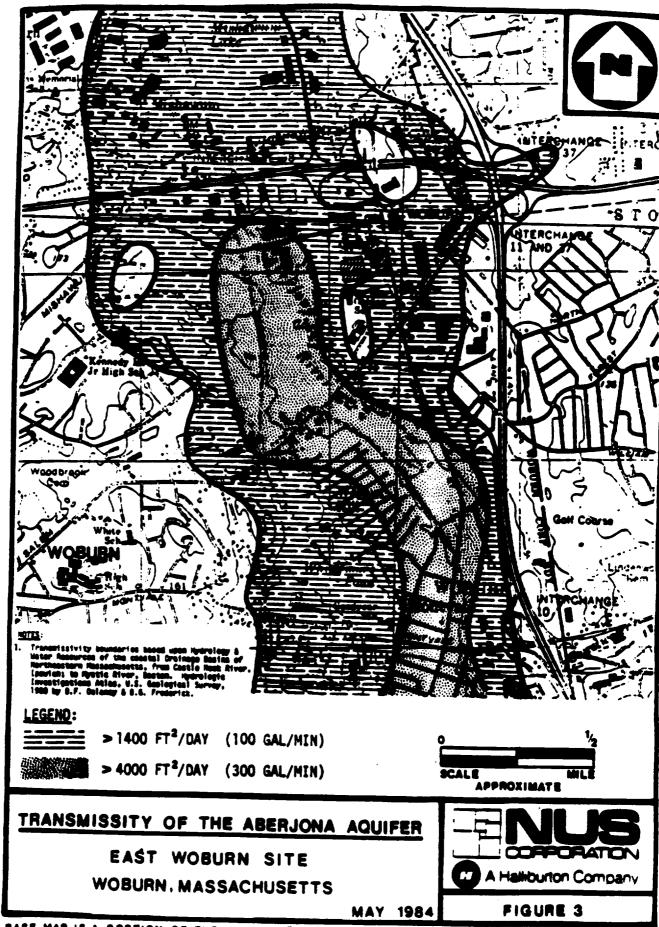
AVA-Warehouse A. Cummings Industrial Centers - Offices C. Cummings Industrial Centers - Offices Aberjona Auto Parts D. Ariwood, Inc. - Wood/Metal doors, hardware Ĕ. Brodie, Inc. - Industrial trucks, tractors F. Brodie. Inc. - Industrial trucks, tractors G. H. Post Office Bradlee's - Commercial ı. J. Celotex Corporation - Warehouse K. Economics Lab, Inc. - Distributor of soap and cleaning compounds L. ADAP/Kamco. - Commercial, auto parts Μ. Waterbed Warehouse - Commercial Charrette - Commercial, art supplies N. 0. Woburn Foreign Motors Hogan Tire Company - Tire distributor P. Q. Bliss Marine - Boating equipment R. Hurlbert Datsun - Automobile sales and repair 5. Cummings Industrial Centers - Offices T. Northern Research and Engineering Corporation U. Continental Metal Products - Hospital equipment ٧. Cummings Industrial Centers - Offices W. Cummings Industrial Centers - Offices X. Interstate Industrial Uniform Rental Y. Metro Siding and Roofing Z. W.R. Grace - Food wrapping equipment AA. Hemingway Transportation, Inc. - General commodities trucking BB. Cummings Industrial Centers - Offices CC. Cummings Industrial Centers - Offices DD. Cummings Industrial Centers - Offices EE. Cummings Industrial Centers - Offices FF. McKesson and Robbins Drug Company GG. 99 Restaurant HH. Koala Inn New England Plastics - Plastics manufacturing II. **JJ.** Mirra Construction Company, Inc. KK. Independent Tallow Company LL. Whitney Barrell MM. Murphy Waste Oil NN. Bioassays Systems Corp. 00. J.J. Riley Tannery PP. Lechmere Corp Offices QQ. United Stationers RR. Rohtstein Corp. 55. Weyerhaeuser

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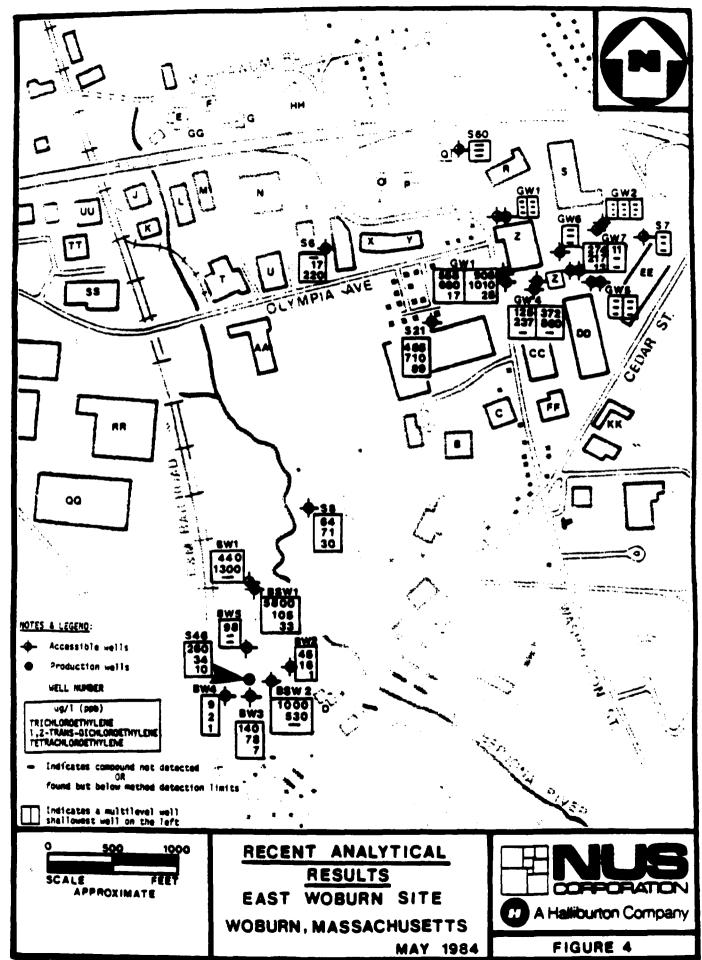
· also contained high levels of 1,1,1,-trichloroethane (100-200 ppb). High levels of tetrachloroethylene (>200 ppb) were detected at Well S6, north of Wells G & H (Figure 1).

The E & E reports, "Chlorinated Solvent Contamination of the Groundwater, East and Central Woburn" (2) and "Evaluation of the Hydrogeology of East and North Woburn" (1), identified potential source areas for these compounds based on being upgradient of a specific organic compound's groundwater plume, the direction of groundwater flow relative to that plume, and site inspections of seventeen active and inactive facilities within and around the study area (see Figure 2). E & E suggested that the contamination detected at Wells G & H likely emanated from property(ies) north and/or northeast of these wells. E & E did not, however, identify the source area for the contamination present at Well 5-46. The reader is referred to the previously referenced Ecology & Environment reports for more detailed information.

in May, 1983, as a result of E & E's investigations and subsequent studies by the EPA and DEQE, three orders (under Section 3013 of the Resource Conservation and Recovery Act-RCRA) were issued to W.R. Grace and Co., Inc. (Cryovac), Interstate Uniform Services Corp., and Beatrice Foods Inc. These orders required submission of proposals for sampling, analysis, monitoring, and reporting in relation to possible groundwater contamination on or emanating from their properties.

Subsequent groundwater monitoring well installations by the three companies are denoted on Figure 1 as follows: W.R. Grace - GW; Bestrice Foods - BW, BSW; and Interstate Uniform - IUS.

The work performed as a result of EPA's orders has aided in further delineating possible source areas of contamination to Wells G & H. Recent analytical data from these sampling surveys conducted by the concerned parties and NUS sampling surveys are presented in Figure 4.



BASE MAP DERIVED FROM U.S.G.S. LEXINGTON, BOSTON NORTH, READING & WILMINGTON QUADRANGLES 1971.1979

1.2 Purpose/Objectives

The purpose of the Remedial Investigation is to determine the nature and extent of groundwater contamination at the Wells G & H site and gather all necessary data to support the work conducted during the feasibility study. The Wells G & H Site will be referred to in this scope of work as the Wells G & H aquifer area. The scope of the investigation will be focused on collecting the type and amount of dant required to determine the need for and extent of remedial action, and for development and evaluation of off-site remedial alternatives during the subsequent feasibility study phase. The data collected will be sufficiently relevant, technically sound and defensible to support possible future enforcement actions against responsible parties which may include source control and/or cost recovery.

The Remedial Investigation will provide sufficient information and interpretation to achieve the following objectives:

- describe the geohydrology of the Wells G & H aquifer area including surface water and groundwater movement; and identify contaminant source areas, and describe pathways and mechanisms of contaminant transport.
- develop a geohydrologic and chemical data base sufficient to support a subsequent remedial action feasibility study that will determine the need for and extent of remedial action and will identify and evaluate the most cost-effective remedial actions for mitigating the effects of groundwater contamination at the Weils G & H aquifer area, and
- investigate suspected contaminant source areas, identify properties that are contributing contamination to the Wells G & H aquifer area, and collect information that is adequate to support successful enforcement actions and source control remedial action.

The following sections describe, in detail, the work NUS proposes for this Remedial Investigation to achieve the above objectives.

2.0 PLANNING CONSIDERATIONS

2.1 Subcontracting

NUS/FIT plans to utilize subcontractors for the following tasks: surveying, drilling and installation of groundwater monitoring wells, performance of grain size analysis, and in-situ permeability testing.

The proposed schedule presented in this Scope of Work includes the efforts required to prepare bid specification for the activities noted above, as well as the efforts required to procure subcontractors. Additionally, this Scope of Work includes the efforts by NUS/FIT to direct and oversee subcontractor activities in the field and to review subcontractor performance and work products. All of these estimates for level of effort assume that subcontractors can be procured on a timely basis, and that they can perform the work outlined in the bid specifications. If difficulties arise in negotiating subcontracts or working with subcontractors, additional efforts may be required, resulting in potential schedule delays and increased costs. In the event that such problems become evident, NUS/FIT will revise the schedule estimates.

2.2 Site Access

There are two areas of concern regarding site access: logistics and legal access. Logistical concerns are mainly drilling equipment access to wet portions of the site near the Aberjona River. Delays until drier conditions or procurement of the necessary equipment to access these areas may result in increased subcontractor costs.

Field activities have been planned to take into account the physical accessibility of the areas involved.

In terms of groundwater sampling, this Scope of Work assumes that NUS/FIT personnel will have sampling access to all EPA wells installed by either the former

FIT contractor (Écology & Environment) or by NUS/FIT. Access will have to be procured for the wells belonging to W.R. Grace Co., Interstate Uniform, and Beatrice Foods.

All schedule and budget estimates presented in this Scope of Work are predicated on the ability of NUS/FIT staff and subcontractors to obtain fairly unlimited access to the study area throughout the course of field activities. EPA will assist NUS/FIT in obtaining access to all parts of the study area.

2.3 Health and Safety

All field tasks will require a task specific health and safety plan. These tasks include the initial sampling round, groundwater monitoring wells installations, final sampling, permeability testing and pump tests. The health and safety plan will define appropriate field clothing, breathing zone monitoring requirements and corresponding action levels, and personal decontamination procedures. Emergency planning will also be addressed. Actions levels for respiratory equipment and other requirements will be dictated by NUS regional and corporate policies as well as by site-specific conditions to be addressed in the safety plans. General guidelines for the specific field tasks are described in section 3.0. These guidelines will be subject to approval by the NUS Health and Safety Officer at the initiation of fieldwork.

2.4 Quality Assurance and Quality Control

All TDD-specific tasks are defined initially in a Management Work Plan. The technical approach to each field task is described in detail in a specific Task Work Plan. NUS/FIT Standard Operating Guidelines are used as a basis for developing task-specific procedures. Deviations or modifications to any guideline are detailed in the task work plan technical approach. All management and task work plans are reviewed internally and approved before initiation of any work.

Upon initiation of field activities, a copy of all appropriate Standard Operating Guidelines will be provided to EPA and DEQE. All deviations and modifications to

the guidelines will also be provided. Subsequent review and comment by EPA and DEQE will determine final Standard Operating Procedures for field work.

Standard Operating Guidelines will address, but not be limited to the following procedures: collection of quality control samples (duplicates and blanks), groundwater and surface water sampling, soil classification, monitoring well installation, and quality control review of analytical data. An overview of the Standard Operating Guidelines related to the major field tasks proposed in this study is presented in Appendix D. It is important to note that the guidelines presented are only an overview and are not all inclusive. Periodic audits of project files, field work or other elements will be conducted by the Region I Quality Assurance Officer to insure that divisional and regional quality assurance requirements are met.

All memos, trip reports and final reports require internal reviews and approval. A final draft report will be submitted to EPA and DEQE for internal review before a final report is issued. Quality Assurance will be achieved by adherence to Standard Operating Guidelines, internal audits and internal review.

10 PROPOSED SCOPE OF WORK

The boundaries of the Remedial Investigation study area will be Interstate I-95 (state route 128) to the north and Cedar/Salem Street to the south. The boundaries to the east and the west will be determined based on hydrologic factors (Figure 1). The areas beyond the study's northern and southern boundaries are within the Aberjona aquifer. In order to develop an extended data base for the feasibility study, groundwater samples will be collected from existing wells in these areas and studies conducted by responsible parties in North Woburn will be reviewed and evaluated.

In order to achieve the stated objectives, the Remedial Investigation will consist of the following activities conducted in three phases.

- Review existing data and conduct an initial groundwater and surface water sampling round to provide a current assessment of the extent, nature, and degree of contamination.
- Installation of over forty overburden and shallow bedrock groundwater monitoring wells in the study area to provide geologic and hydrologic data necessary in identifying pathways and mechanisms of contaminant transport and in identifying source areas of contamination.
- Conduct three rounds of surface water and groundwater sampling to include all newly installed monitoring wells in addition to those sampled in the first round, to contribute to the data base necessary to achieve the stated objectives.
- Conduct an aquifer test in the vicinity of Wells G & H to provide the data necessary to evaluate the feasibility and cost effectiveness of possible remedial actions.
- Presentation of all data and information in a final report that will describe the geohydrology of the Wells G & H aquifer area sufficient to support the feasibility study and identify those properties from which contamination to wells G & H emanates.

3.1 Phase I Activities

NUS/FIT was tasked on May 7, 1984 by EPA to begin Phase I activities under Technical Directive Document (TDD) Number F1-8405-02. Phase I activities include the following tasks:

- Task 01: Drafting Final Scope of Work
- Task 02: Review of Existing Data
- Task 03: Planning for Site Access
- Task 04: Preparation of a Base Map
- Task 05: Procurement of Subcontractors
- Task 06: Mobilization of Equipment
- Task 07: Performance of an Initial Round of Environmental Sampling

Awarding of subcontracts and initiation of Phase II activities will not occur until EPA has granted approval of the proposed scope of work. It is anticipated that approval could be granted within three weeks after receipt of the scope of work by EPA. Within this time, EPA must also determine whether any responsible parties are interested in conducting the Remedial Investigation. Each Phase I task is further described below.

Task 01 Drafting Final Scope of Work

An initial scope of work delivered to EPA on January 13, 1984 has been revised on the basis of comments received from EPA and DEQE. The revised (final) scope of work for a remedial investigation is presented in this document and represents the completion of this task.

Task 02 Review of Existing Data

NUS/FIT will review eight main areas of existing datas

previous data collected by Ecology and Environment, the previous FIT contractor

- recent data collected during Whitman and Howard Inc.'s Infiltration/Inflow Analysis on the sewer line in the study area
- recent analytical and geohydrologic data collected in response to EPA 3013 orders by W.R. Grace, Beatrice Foods and Interstate Uniform
- boring data from construction of Cummings Park or other buildings, if available
- data collected during construction and initial exploratory testing of Wells
 G & H
- data collected concerning groundwater, surface water or soil contamination in North Woburn, north of state route 128, but within the hydrologic boundaries of the Aberjona aquifer
- data collected concerning groundwater, surface water or soil contamination south of Cedar/Salem Street, but within the hydrologic boundaries of the Aberjona aquifer
- surface water data collected from the study area by DEOE

The data from Ecology and Environment, local boring logs and the EPA 3013 orders will be used to aid in achieving the following study objectives: 1) describing the geohydrology of the Wells G & H aquifer area, 2) providing a geohydrologic basis for determining cost-effective remedial action and 3) identifying contaminant source areas contributing to contamination of the Wells G & H aquifer area.

Data collected by other parties from north of I-95 and south of Cedar/Salem Street, but within the hydrologic boundaries of the Aberjona aquifer will be used to support GCA's feasibility study. The primary focus of all review will be on data that provides the geohydrologic basis for determining the need for and extent of remedial action and the feasibility of various remedial alternatives.

Task 03 Planning for Site Access

Arrangements will be made to ensure that site access may be obtained for all NUS/FIT and subcontractor personnel. Since the NUS/FIT office is located nearby, there is no need to establish a separate project office on the site. Proposed groundwater and surface water sampling locations will be examined to verify that they can be utilized. Further discussion of site access is presented in Section 2.2.

Task 04 Preparation of Basemaps

Basemaps will be prepared, utilizing as a starting point the previous FIT Field Investigation basemap and aerial photos. A detailed basemap will depict the study area described: in Sections 1.2 and 3.0. A general basemap that includes the hydrolgic boundaries of the aquifer will also be developed. The general basemap will include additional areas outside of the study area that will be addressed in support of the feasibility study (Section 3.0).

Task 05 Procurement of Subcontractors

Subcontractors capable of providing services for the Remedial Investigation will be identified. Subcontractors will be required for surveying, drilling and installation of groundwater monitoring wells, and performance of grain size analysis and in-situ permeability testing. Actual bid specifications will be prepared under Phase I, but will not be issued until authorization to proceed with the scope of work has been received.

Task 06 Mobilization of Equipment

Major pieces of equipment, such as dedicated project truck and OVA, will be obtained and prepared for field use. Disposable equipment will be ordered, and other equipment needs will be identified for the upcoming field activities.

Task 07 Performance of an Initial Round of Environmental Sampling

An initial sampling round will be conducted prior to the start of field activities. The purpose of this sampling round will be to assess the current extent of surface water and groundwater contamination. As currently envisioned, samples will be collected from approximately twenty-four groundwater sampling locations and four surface water sampling locations (Figure 5A & 5B). Sediment samples will also be collected at the surface water sampling locations. Samples will be analyzed through the Contract Laboratory Program for the thirty-one volatile priority pollutants (Appendix B).

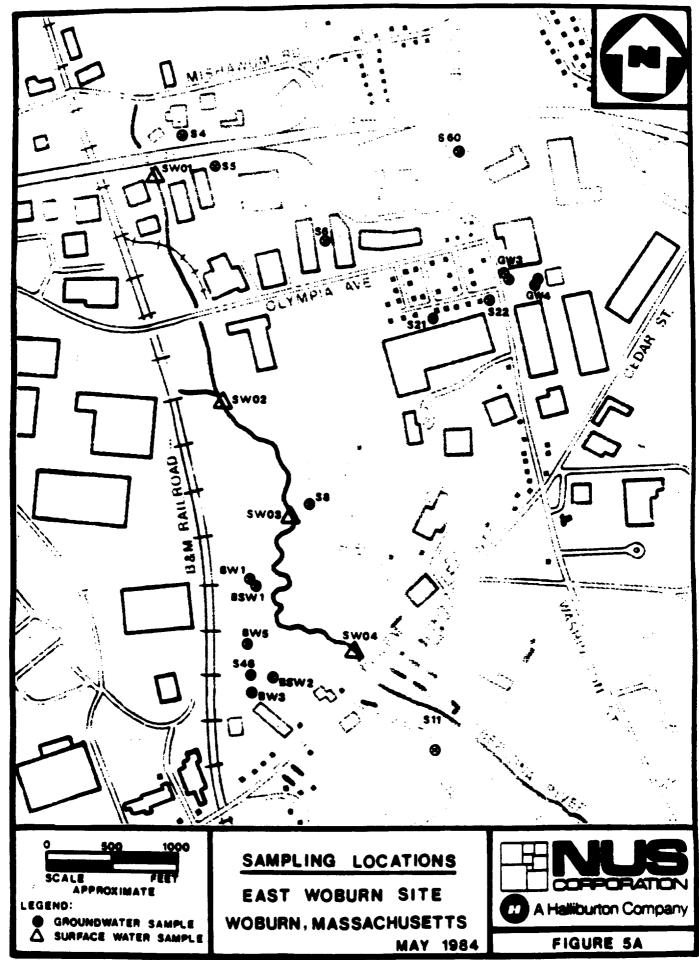
In addition, in-house screening on a Photovac gas chromatograph for volatile organics will be conducted on all samples. This screening data will provide qualitative information on a timely basis to aid in monitoring well placement.

Analytical information from this sampling round may modify groundwater montoring well locations. Any changes to well locations proposed in this scope of work will be discussed and approved by EPA. Groundwater, surface water and sediment sampling will adhere to the appropriate NUS Standard Operating Guidelines (Appendix D).

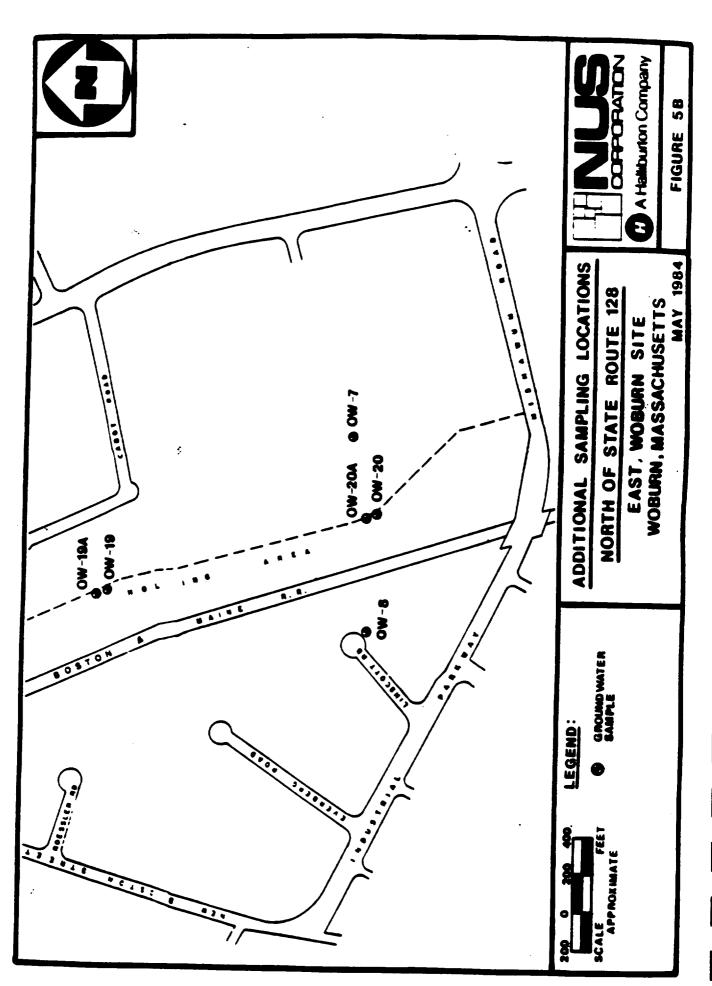
In addition to groundwater and surface water sampling, soil sampling will be conducted around sewer manholes suspected of experiencing periodic surcharging. Samples will be collected by hand augering and screened in-house for volatile organics. Manholes, which have experienced surcharging, will be identified by DEQE. If soil sampling around manholes produces a positive result, soil sampling (hand augering) will be conducted along some of the sewer lines in the study area (to be located later).

3.2 Phase II Activities

This section presents the scope of work for the field portion of the Remedial Investigation. Five major tasks are proposed as follows:



BASE MAP DERIVED FROM U.S.G.S. LEXINGTON, BOSTON NORTH, READING & WILMINGTON QUADRANGLES 1971,1979 & 1980 AERIAL PHOTOGRAPHS OF EAST WOBURN, MA 3-6



- Task 08: Installation of Groundwater Monitoring Wells
- Task 09: In-situ Permeability Testing/Grain Size Analysis
- Task 10: Final Sampling Rounds
- Taskil: Aquifer Test
- Task 12: Surveying

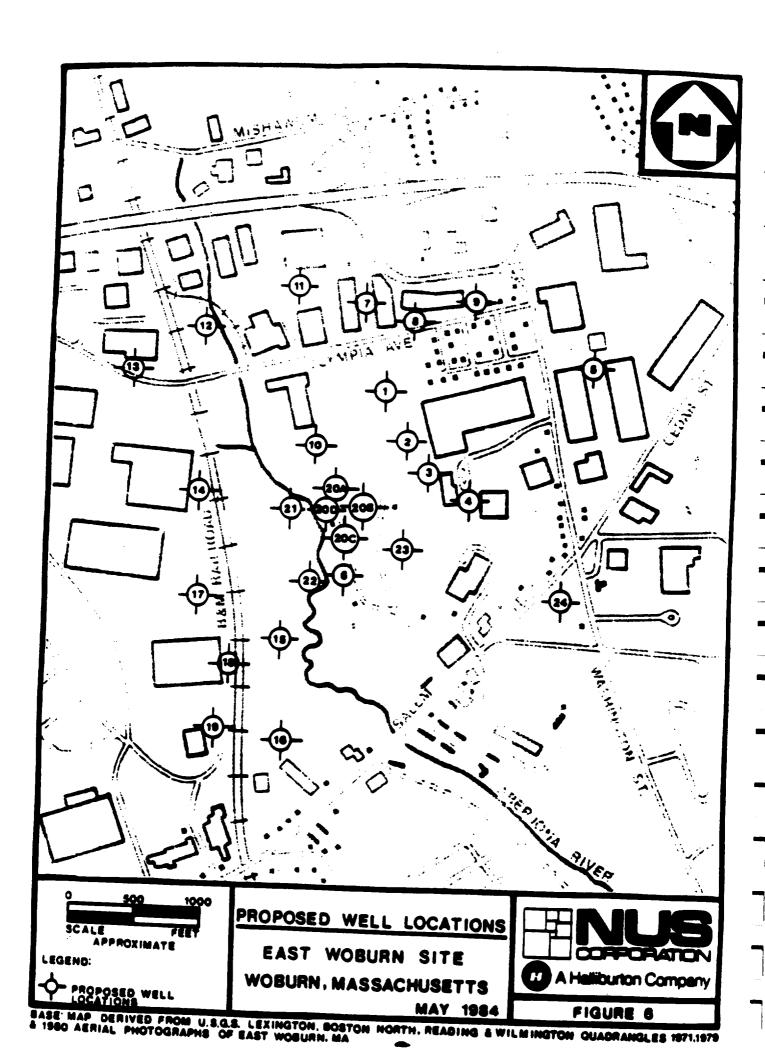
The field tasks have been planned to address the project objectives set forth in Section 1.2. Detailed task work plans for each task will be developed prior to the initiation of each field activity. Task work plans will address all relevant health and safety, quality assurance and technical requirements necessary to conduct the specified task. Task work plans will be subject to review and approval by EPA prior to initiation of work.

Task 08 Installation of Groundwater Monitoring Wells

The objectives of groundwater monitoring well installations are: to provide ground truthing for depth to bedrock and depth to groundwater; to provide surficial and bedrock geologic data for evaluation of groundwater movement in unconsolidated sediments and bedrock; provide data on vertical hydraulic gradients; provide data on vertical stratification of groundwater contamination; and to provide groundwater sampling locations for evaluation of drinking water quality and the extent of groundwater contamination.

The data will be used to describe the geohydrology of the Wells G & H aquifer area, to develop a geohydrologic data base sufficient to support subsequent remedial action feasibility study, to determine the need for and extent of remedial action, and to determine contaminant source areas.

The proposed groundwater monitoring well network is presented in Figure 6. Final well locations may change as data are obtained from the review of existing studies,



the initial sampling round and well installations. During monitoring well installations, daily progress will be discussed with EPA and DEQE and all changes will be reviewed and approved by EPA and DEQE.

Input from DEQE and EPA will be considered in determining the number, placement and construction of monitoring wells. In general, well construction will depend on OVA screening and the geologic strata encountered (Appendix D). Well screens will be placed in the geologic strata with the highest OVA readings and/or greatest permeability as predicted by visual grain size distribution. If a vertical distribution of volatile contamination is observed, well screens will be placed within each zone of contamination by means of nested wells. Criteria for determining what constituents different zones of contamination is detailed in Appendix D. Multi-level wells will also be installed to provide data concerning vertical hydraulic gradients.

After well installation and development, groundwater samples will be collected from each well for in-house screening on a Photovac gas chromatograph. Data from these samples will be used to decide if additional wells are needed in key areas as described below.

The remainder of this section describes the specific rationale for placement of each well location and possible well construction. The locations are discussed in the chronological order of installation.

Well locations Nos. I to 4 - consists of nested multi-level wells. Each location will consist of a shallow bedrock well screened at least twenty feet into bedrock, an overburden well screened over the zone of the highest concentration of contamination (as determined by field screening techniques) and a shallow overburden well screened at the water table. Data from these wells will be used to determine vertical hydraulic gradients and vertical distribution of contamination. After well installation, the groundwater will be sampled from all wells and analyzed

on a Photovac gas chromatograph for volatile organics. If contamination is detected at location No. 4, one to two additional wells will be installed to the east and southeast. The data from these additional wells will be used to determine if contamination detected at well No. 4 is part of a plume of contamination emanating from a northeastern or eastern source area.

- Well location No. 5 and 6 will consist of nested multi-level wells. Location No. 5 will consist of a well screened in overburden and shallow bedrock. If, after sampling the newly installed well, contamination is detected, then one to two additional wells will be placed further to the northeast and southwest. Data from these wells will be used to determine the lateral extent of contamination found at Wells S-21 and S-22 and to determine contaminant source areas. Location No. 6 will consist of overburden wells screened at the zone of highest concentration of contamination and at the water table. Data from these wells will be used to determine vertical hydraulic gradients and vertical distribution of contamination. Well No. 6 may also serve as the location of a 6" diameter pumping well (Task 11).
- Well locations Nos. 7, 8, and 9 data collected from these wells along with the recently installed wells, IUS-1,2, and 3, will be used to describe the vertical and horizontal extent of the tetrachloroethylene contamination found at well 5-6 and to identify the source area of that contamination. Well location No. 7 will consist of shallow bedrock well at the same location as the existing overburden well 5-6. Well locations 8 and 9 will either consist of single overburden wells or nested multi-level wells depending on the sampling results from well location No. 7. If a vertical stratification of contamination is detected, nested multi-level wells at locations 8 and 9 may be necessary to describe the extent of contamination and identify the property from which the contamination is emanating.

- Well location No. 10 This location will consist of nested multi-level wells likely screened in overburden and shallow bedrock, again dependent on the result of field screening techniques. This well location is upgradient of the Wells G & H aquifer area and downgradient from the former location of various small industries (Figure 1). The purpose of this well location is to determine whether there is a northern source area of contamination to the Wells G & H aquifer area.
- Well locations Nos. 11, 12, 13 and 14 These locations are in areas upgradient of Wells G & H where few groundwater sampling points exist. Data from these wells plus existing wells north of I-95 will be used to determine upgradient water quality in support of the feasibility study and to determine whether there are northwestern source areas of contamination to the Wells G & H aquifer area. Any nested wells will further provide data on vertical hydraulic gradients.

Well location No. 12 will also consist of a nested multi-level well. As stated, this construction will provide water quality data and data on vertical hydraulic gradients in support of the feasibility study. Field screening techniques will determine the construction of the wells at locations Nos. 11, 13 and 14. If an unidentified source area is indicated by field screening techniques during installation of wells at locations Nos. 11, 13, and 14, these wells will not by themselves identify the property from which the contamination emanates. Additional wells would be necessary; these additional wells would only be installed after consultation with EPA in order to determine priorities for and approval of any changes in direction of the Remedial Investigation.

Well location Nos. 15 and 16 - will consist of shallow bedrock wells as pairs to the existing overburden wells Nos. BSW-1 and BSW-2. The data from these wells will be used to describe the vertical distribution of contamination. They will also serve as water level measuring points during a aquifer test of Wells G & H (described further under Task 11).

- Well locations Nos. 17, 18 and 19 will consist of wells located upgradient of Well No. S-46. The data collected from these wells will be used to locate any unidentified source areas of contamination and will also provide water quality data (in support of the feasibility study) in areas where none exists. The number and construction of wells at these locations will depend entirely on results of field screening techniques and subsequent groundwater sampling. Possible contingencies include nested multi-level wells and additional wells upgradient of these locations. Again, EPA will be informed daily of progress and will review and approve of all field decisions as to final location and construction of wells.
- Wells locations Nos. 20A-D will be installed to provide water level measurement points for a aquifer test of Wells G & H in support of the feasibility study. The aquifer test will be further described under Task II. Location No. 20 will consist of four wells located fifty feet north, south, east and west of the pumping well. Choice of a pumping well will also be discussed further under Task II. These four wells will be single wells screened from the top of the water table to fifteen feet within the saturated zone. The data collected from these wells will be used to determine vertical hydraulic gradient, drawdown and recovery associated with the Wells G & H aquifer area during an aquifer test.
- Location Nos. 21 and 22 will each consist of three nested multi-level wells screened at the following levels: the water table, at some depth in the saturated zone, and in shallow bedrock. These well locations will be placed as close to river as logistically possible. Data collected from these wells during the aquifer test will be used to establish the zone of influence associated with Wells G & H and to evaluate the hydraulic relationships between the Aberjona River and underlying aquifer.

- Well location No. 23 will consist of nested multi-level wells screened in the overburden and bedrock. This location will also provide data on vertical hydraulic gradients and rates and extent of drawdown and recovery during the pump test.
- Well location No. 24 will consist of a single well fully screened to intercept the water table and will provide data on the hydrologic boundaries associated with pumping of Wells G & H.

If permission and/or permits for a aquifer test are not obtained, as will be discussed under Task 11, then some of these final locations will be abandoned. However, location Nos. 21, 22, and 23 will still be installed because they also provide data as to the vertical distribution of contamination, vertical hydraulic gradients and sampling points where few previously existed.

A summary of well locations and the possible number of wells is presented in Table 1.

Task 09 In-situ Permeability Testing/Grain Size Analysis

The objective of conducting in-situ permeability testing and collecting samples for grain size analysis is to provide quantitative data on hydraulic conductivity of the major surficial units through which groundwater (and contamination) is migrating within the study area.

In-situ permeability tests will be performed on selected surficial geological units encountered beneath the site during the remedial investigation. Samples will be chosen based on geologic strata encountered and on OVA readings. This activity will help provide quantitative information on hydraulic conductivity (permeability) of each surficial unit. Location of permeability tests will be determined based on boring log data collected in the field so that permeabilities of the different materials may be estimated. Tests will likely be conducted at nested

Table 1
Summary of Well Locations

Well locations	<u>Туре</u>	Number	Contingencies	Possible additional wells
1	nested multi-level	3		
2	nested multi-level	3	•	
3	nested multi-level	3	•	
4	nested multi-level	3	If contamination present	2
5	nested multi-level	2	If contamination present	2
6	nested multi-level	2	•	
7	bedrock	1		
8	overburden	ı	If contamination found in bedrock	I
9	overburden	1	If contamination found in bedrock	1
10	nested multi-level	2	If contamination found	?
11	to be determined.	1	If contamination found	? .
12	nested multi-level	2	If contamination found	?
13	nested multi-level	1	If contamination found	?
. 14	nested multi-level	1	If contamination found	?
15	bedrock	1	10419	
16	bedrock	i		
17	to be determined	i	If contamination found	?
18	to be determined	1	If contamination found	?
19	to be determined	i	If contamination found	?
20A	screened at water table	1		
20B	screened at water table	ī		
20C	screened at water table	i		
20 D	screened at water table	i		
21	nested multi-level	3		
22	nested multi-level	3		
23	to be determined	2		
24	to be determined	i		
				•

To be determined based on field observations.

Total

well locations after one well has been installed and the geologic strata have been identified. Either falling head or rising head tests along with recovery tests will be performed based on the particular geologic unit being addressed and on degree of saturation at the depth being evaluated. The tests will be conducted by the drilling contractors within the drilled borehole just prior to installation of the well. In addition to the in-situ permeability tests, grain size analyses will be performed on selected samples of material taken from the boring in the interval(s) being evaluated. The findings of these tests will be reviewed in light of the permeability test results. Details of the procedures will be included in the task work plan for groundwater monitoring well installation.

Task 10 Final Sampling Round

The objective of collecting groundwater and surface water samples are: to provide drinking water quality data, to evaluate the physical extent (both horizontally and vertically) of groundwater contamination, to determine the chemical nature of groundwater contamination, to provide data to evaluate surface water quality, and to provide data to determine source areas of groundwater contamination.

Three final sampling rounds, a month apart from each other, will be conducted after the well installation task is completed. All newly installed wells will be sampled in addition to all sample locations from the initial sampling round. All groundwater samples will be analyzed for the thirty-one volatile priority pollutants plus tentative identification and quantitation of the next ten most abundant compounds by EPA method 624. An additional ten percent of the samples will be analyzed for all organic and inorganic priority pollutants.

Aqueous samples collected for inorganic analysis will be filtered to provide data on dissolved constituents. Dissolved concentrations of inorganic parameters will provide data on drinking water quality in support of the feasibility study. Sample locations for priority pollutant analysis will be chosen based on field screening results and/or areas where little information exists on water quality. This data will be used to determine the chemical nature and physical extent of groundwater contamination that currently limits the production of potable drinking water from Wells G & H.

In support of the feasibility study, the samples collected from the weils at location Nos. 11, 12, 14, 21, 23 and well Nos. 58 and 521 will also be analyzed for Federal Primary and Secondary Drinking Water Standards and the standards set by the Commonwealth of Massachusetts (Appendix C). The locations were selected to represent general groundwater quality in different areas and depths in the aquifer. The data obtained from these analyses will provide additional information on the aguifer water quality not attributed to volatile organic contamination. Review of historical data indicates that other water quality problems may exist and must be considered in determining the feasibility of aquifer treatment for volatile organics only. In addition, the concentration of certain parameters such as iron and manganese must be quantified in order to properly design any treatment facility. Groundwater and surface water and sediment sampling will be conducted according to the appropriate NUS Standard Operating Guideline. The technical approach. quality assurance requirements and health and safety considerations will be detailed in a task work plan. The general approach will follow that described in Appendix D.

Task II Aguifer Test

The objectives of the aquifer test are to provide data on: aquifer hydraulic conductivity, specific yield, zone of influence associated with pumping Wells G & H, and hydraulic connection between the Aberjona River and Wells G & H aquifer area. The data will be used to determine the method of groundwater treatment, design pumping capacities, operating life of the facility and ultimately the feasibility of this remedial option.

GCA's initial screening of remedial technologies for Wells G & H has determined that one likely remedial option will be groundwater treatment (well head treatment) and discharge. This option requires extensive data concerning aquifer characteristics such as concentration and spatial distribution for each contaminant of concern, and aquifer physical and hydraulic properties.

As previously discussed, well locations and sampling will be adequate to provide the necessary data on the concentration and spatial distribution of each contaminant of concern. Geologic classification of soils during well installations and in-situ permeability tests will provide additional data on the physical properties of the aquifer surrounding Wells G & H. However, an aquifer test will be necessary to provide the following data: aquifer hydraulic conductivity, specific yield, zone of influence associated with pumping Wells G & H, and hydraulic connection between the Aberjona River and the portion of the aquifer associated with Wells G & H.

The hydraulic relationship between the Aberjona River and Weils G & H was discussed in the Remedial Action Master Plan (RAMP) (3). The RAMP suggested that surface water quality could have impacted groundwater quality at Wells G & H under pumping conditions and vice versa under non-pumping conditions. The pump test is designed to establish whether there is a hydraulic connection.

Data collected during the pump test will be used to evaluate the effects of well head treatment on changes in concentration overtime at the treatment facility, downgradient receptors such as the Aberjona River, ponds; and other pumping wells, and migration behavior of upgradient sources of contamination.

GCA recommends a 48-hour pump test (at a pumping rate of 500-800 gailons/minute) to determine physical properties and hydraulic boundaries of Wells G & H. The 48-hour test is a preliminary estimation; a longer test may be required. The final design of the aquifer test will be described in the task work plan subject to approval by EPA and will follow in an addendum. GCA recommends the following data collection programs

1) static water levels - Prior to the initiation of a pump test, water level measurements should be obtained from all wells included in GCA's proposed monitoring network. Information obtained from the fully screened wells can be used to develop static water table contours; data obtained from the nested piezometers will be used to evaluate vertical gradients prior to the onset of pumping.

- of time-drawdown measurements GCA suggests a non-equilibrium analysis of time-drawdown measurements in determining aquifer properties. This test should include a test well pumping at a specified constant rate, and the newly installed observation wells described in Section 3.2 (Task 07). This test requires early time-drawdown data. For observation wells situated close to the test well, water level measurements must be obtained at very close intervals during the first few hours. As the pump test progress, the interval between measurements increases until a change in drawdown is no longer evident at the observation well furthest from the test well. Measurements will also be made of the level of the river at gaging stations located upstream and downstream of the pumping well.
- steady-state measurements Based upon an estimate of the hydraulic conductivity for the stratified sands and gravel of the aquifer, GCA believes steady-state will be reached at those observation wells outlined above within the 48-hour test period. Prior to cessation of the pump test, water level measurements should be taken at all fully screened wells and nested piezometers of the monitoring network. Water table elevations measured at fully screened wells will be used in developing contour maps depicting the resulting cone of depression. The remaining water level data will be used to determine hydrologic boundaries and vertical gradients.

Once steady-state is reached during a pump test at a given discharge rate, hydrologic boundaries can be established. Observation wells situated relatively far from the test well will exhibit negligible drawdown. Such wells are indicative of the aquifers boundaries, because their piezometric head is not impacted by pumping.

4) recovery measurements - Finally, water level measurements during recovery of the aquifer to static conditions will provide additional data on hydraulic conductivity of the Wells G & H aquifer area.

The data collected during the pump test will also be used to determine hydrologic connections between the Wells G & H aquifer area and source areas of contamination. It will determine vertical gradients under pumping conditions and thus contaminant movement.

The minimum number of wells, in GCA's proposed aquifer test, to be used in defining the hydrologic influence of the Wells G & H are:

Well locations 20A, B, C, and D-2, 3, 10, and 15 21, 22, 23, and 24 Wells: 58, 543

It is likely that more wells will be included to be specified in the task work plan. Choice of pumping well will be determined during Phase I of the Remedial Investigation. There are two alternatives: rehabilitate Well H or construct a new well. Well G has experienced a great amount of vandalism and NUS/FIT believes it would not be cost-effective to repair. A new well capable of pumping 150-300 gallon/minute would require a 6" diameter well casing, gravel packing and an adequate screen slot size to permit easy withdrawal of water. It would be screened from the top of the water table to a lower less permeable stratum. It is currently unknown whether it is feasible to bring Well H on line again. This determination will be made during Phase I of the Remedial Investigation.

A number of costs would be incurred in rehabilitating well H; these costs include:

- Determination of screen length.
- Examination of all mechanical equipment to determine if it is in working order.
- Examinaton and possible repair of all electrical equipment.

A final decision would be made after costs associated with rehabilitating Well H versus constructing a new 6° gravel packed well and purchasing or renting a pump that can draw 150-300 gallons/minute are determined.

permission and/or permits to conduct an aquifer test will be procured during Phase I. Through discussions with EPA and DEQE, NUS/FIT believes the greatest obstacle to obtaining the necessary permits and/or permission will be the disposition of pumped water. There are two primary options: treatment with discharge to some downgradient point or discharge without treatment to some downgradient point. Treatment may be cost prohibitive and the right to discharge may be denied.

NUS will make every effort to see that these problems are resolved early in the study, as both NUS/FIT and GCA feel a pump test is critical to the Remedial Investigation.

Task 12 Surveying

Following the field activities, the locations and elevations of all new monitoring wells, sampling locations, and important existing monitoring wells will be surveyed and an updated basemap will be prepared. This map will serve as the basemap for the draft report. Prior to the aquifer test, the level of the Aberjona River will be surveyed and calibrated staff gages will be placed upstream and downstream of Well H. These measuring points will be used to determine whether pumping a well in the vicinity of Wells G & H has a draw down effect on the river.

3.3 Phase III Activities

Upon completion of all tasks and requirements for this investigation, a Draft Report will be prepared and submitted to the Region I EPA Site Manager and DEQE for review and comments. EPA and DEQE review and comments will be taken into consideration when preparing the final report.

The report will accomplish the following:

- describe the geohydrology of the Wells G & H aquifer area, including surface water and groundwater movement, and identify contaminant source areas and describe pathways and mechanisms of contaminant transport,
- present geohydrologic and chemical data sufficient to support a subsequent feasibility study which will determine the need for and extent of remedial action and will identify and evaluate the most cost-effective remedial actions for mitigrating the effects of groundwater contamination at the Wells G & H aquifer area, and
- identify contaminant source areas and properties that are contributing contamination to the Wells G & H aquifer area, and collect information that is adequate to support successful future enforcement actions and source control remedial action.

4.0 REFERENCES

- 1. Ecology and Environment, Inc. Evaluation of the Hydrogeology of East and North Woburn, Massachusetts: Volume I. 25 June 1982. EPA Contract No. 68-01-6056, TDD No. F1-8109-02.
- 2. Ecology and Environment, Inc. Chlorinated Solvent Contamination of the Groundwater, East Central Woburn, Massachusetts. 8 March 1982. EPA Contract No. 68-01-6056, TDD No. F1-8203-01.
- Camp Dresser & McKee, Inc. Draft Remedial Action Plan for East Woburn, Woburn Massachusetts. 21 January 1983. EPA Contract No. 68-03-1612, Work Assignment 2-1-12.

APPENDIX A

TECHNICAL DIRECTIVE DOCUMENTS F1-8311-06 AND F1-8405-02

1 LOST CENTER:		VFIT ZONE CONTRACT DIRECTIVE DOCUMENT (TDD) .	2. NO. FI-8311-06
3. PRIGRITY:	4. ESTIMATE OF TECHNICAL HOURS:	S. EPA SITE IO.	6. COMPLETION DA	TE. 7. REFERENCE INFO
⊡ ні с н	100	MAD 980 732 168	÷	□YES □NO
COM WEDIUM	4A. ESTIMATE OF SUBCONTRACT COST:	SA. EPA SITE NAME:	12/15/8	ATTACHED PICK UP
		Hells G A H	12/13/0.	2
East Woburn.	RIPTION: <u>Develop a Sc</u> This investigation Contamination to Hells	should be aimed at (
the following	<u> </u>		ot be limited	to 10. INTERIM . OEAOLINES:
Objective Site Descr				-
	ion & installation			
Groundest	r sampling			-
Analytical	results			-
Recommends	tions			
11 DESIMED REPORT FO	RM: FORMAL R EPOR	T 😰 LETTER REPOR	PTF0	RMAL BRIEFING
OTHER (SPECIFY):				
12. COMMENTS:G	coordinate with Dave D	elaney		
13. AUTHORIZING RPG:	Caulk	fruits		14. DATE: // - 28/83
15. RECEIVED BY: Paul F.	ACCEPTED ACI	CEPTED WITH EXCEPTIONS	☐ REJECTED	18. DATE: 11/29/83
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1 COST CENTER:	. AEM TECHNICAL	WEIT ZONE CONTRACT DIRECTIVE DOCUMENT (TDD)	2. NO. F1-8405-02
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•	CRIPTION: Develop a scope on (RI) at the Woburn G +			remedial
party (parti I activities of a base m	ild support the feasibility ies) and successful cost re- include review of existing ap, procurement of subco- nce of an initial round of	covery enforcement ac t data, planning for site ntractors, mobilization	etion(s). Phase access, preparation of equipment	estion
11 DESIRED REPORT F	ORM: FORMAL REPOR	T () LETTER REPOR	T FO	RMAL BRIEFING
12. COMMENTS:CO	ordinate activities with A	Lichard Leighton, EPA		
13. AUTHORIZING APO:	Sull St	all and		14. DATE: S=1.S=84
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APPENDIX B LIST OF VOLATILE PRIORITY POLLUTANTS

YOLATELE COMPOUNDS

PF 1	CM!	
(27)	107-42-4	acrolein
OM	197-13-1	
(94)	71-43-2	benzene
(67)	X-23-1	gerban terraphieride
771	104-14-7	ghiersbanagne
(104)	107-44-3	1.2-dehlersethene
(IIA)	71-55-4	lalal-trishigroothers
(134)	75-10-1	1.1-dishieresthese
(loa)	77-49-1	1.1.2-trishiercothere
(134)	77-30-5	1.1.2.2-towashierosthese
(164)	73-49-1	digreedene
(124)	110-75-4	2-discouter (view) other
(234)	041	disreferm
(274)	77-35-4	. -dahlersethane
(30A)	136-49-1	Tana-1.2-dichlersestone
(33.)	73-47-3	1.2-dichlerserserse
(33A)	10041-41-4	Tana-1.1-debterversesse
(384)	100-41-4	ester from some
	MI-11-43	de-i.2-delevere
(MA)	73-49-2	medirione obleride
(623)	70-17-1	<u>distantions</u>
(MA)	79-43-9	<u>bramementare</u>
(074)	73-23-2	_bramelerm
(64.1)	77-17-4	bramesichleremestene
(634)	77-49-4	Sugratrighteramethera
(384)	73-71-4	dishlarediffusementune
SIA	136-46-1	<u>ahieradihramamethana</u>
(13A)	127-12-4	WFoshigroestune
(RA)	194-44-7	19 harre
(ITY)	77-41-4	Tighlarestiane
(SEA)	77-41-4	vinyi ghlerida

Non-Prierity Pollutant Hazardous Substances List Compounds

YOLATELES

	(crists an
CMI	learess or
<u> </u>	(60199)
78-93-3	7-hyserene
73-13-4	cartendaudilde
319-78-4	?-Jesusane
100-10-1	t-menteri-2-agreement
100-42-3	HYPE
100-03-4	AND PERITIE
93-01-4	g-ovigne

APPENDIX C LIST OF DRINKING WATER STANDARDS

FEDERAL DRINKING WATER STANDARDS FOR PUBLIC WATER SUPPLIES

Parameter

I. Inorganic

Primary Standards (1)	Maximum Contaminant Levels for Inorganic Chemicals (mg/l)
Arsenic	0.05
Barius	1
Cadmium	0.010
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate as N	10.
Selenium	0.01
Silver	0.05
Fluoride	$1.4 - 2.4^{(2)}$
Sod 1 um	20.(5)

II. Organic

a)	Contaminant	Level (mg/l)
	Endrin	0.0002
	Lindane	0.0004
	Methoxychlor	0.1
	Toxaphene	0.005
	2,4-D	0.1
	2.4.5-TP Silvex	0.01

b) Total Trihalomethanes (TTHM)

TTHM = sum of the organohalogen compounds

MCL = 0.10 mg/l

Secondary Standards (3) Contaminant Levels (mg/1) 250 Chloride 15 color units Color 1.0 Copper Corrosivity (4) non-corrosive 0.3 Iros 0.05 Manganese 3 threshold odor number Odor 6.5-8.5 s.u. рĦ 250 Sulfate 5.0 Zinc 500 Total Dissolved Solids 0.5 Foaming agents

Recommended Maximum

- (1) 40 CFR Part 141 (Federal Register, Vol. 40, No. 248, December 24, 1975)
- (2) Maximum allowable concentration depends on annual average of maximum daily nir temperatures at site of supply.
- (3) 40 CFR Part 143 (Federal Register, Vol. 44, No. 140, July 19, 1979)
- (4) Requires Calcium Hardness Alkalinity, TDS.
- (5) currently being considered

Massachusetts Requirements

- Demand, such as COD, BOD, TOC, chlorine residual.
- Pesticides, Herbicides, and other Organics, such as hydrocarbons, carbamates and organo-phosphorus compounds.
- <u>Microbiological Analyses</u>. this discipline shall be led into the following categories:
 - (A) Total Coliform by the Membrane Filter Method.
 - (B) Fecal Coliform by the Membrane Filter Method.
 - (C) Total Coliform by the Fermentation Tube Method.
 - (D) Fecal Coliform by the Fermentation Tube Method.
 - (E) Standard Plate Count.
- Radiological Analyses.

Additional Requirements

- Chloroform Trihalomethane formation potential
- Temperature

APPENDIX D

OVERVIEW OF STANDARD OPERATING GUIDELINES

CONTENTS

SECTION		PAGE
1.0	GROUNDWATER, SURFACE WATER AND SEDIMENT SAMPLING	D-2
2.0	GROUNDWATER MONITORING WELL INSTALLATIONS	D-3

1.0 GROUNDWATER, JRFACE WATER AND SEDIMENT SAMPLING

Each well to be sampled will be purged a minimum of three well volumes to a maximum of five well volumes prior to sampling. Specific conductance and pH will be monitored following the purging of each well volume. Samples will be taken following the evacuation of at least three well volumes with the stabilization of pH and specific conductance. Conductivity and pH measurements should not exceed ± 0.03 pH units and ± 10% relative conductivity between successive measurements. Regardless of the allowed tolerances on pH and conductivity, static water purging will not exceed five well volumes. The wells will be purged by pumping or hand bailing. Each well sample will be collected from clean stainless steel/teflon bailer after purging is complete and the water level has risen to at least 75% of its greatest drawdown.

Water level measurements will be taken prior to sample collection, periodically during purging and periodically after sampling as the water level returns to static conditions. Collected samples will immediately be labelled and packed in ice prior for removal from the site.

Health and safety requirements will be detailed in a task work plan. Sampling activities will likely require protective clothing (tyveks, inner disposable gloves, outer nitrile gloves, neoprene boots) and use of general decontamination procedures. Periodic ambient air monitoring during well purging will dictate respiratory protection. Careful attention will be paid to the decontamination of purging and sample collection equipment to prevent cross contamination between wells.

Surface water samples will be collected by submerging sample bottles directly into the water. Sediment samples will be collected with a remote stainless steel sampling device. Quality control samples, duplicates and blanks, will be incorporated into the sampling plan.

An additional 44 ml glass vial of each sample will be collected for in-house screening on the Photovac gas chromatograph. Chain of Custody and preservation methods will adhere to the appropriate NUS Standard Operating Guidelines (not discussed here).

2.0 GROUNDWATER MONITORING WELL INSTALLATIONS

Drilling and well installation work to be performed will be subcontracted and will adhere to NUS and EPA approved task work plan specifications.

Drilling will utilize hollow-stem auger or drive casing of hardened steel with a minimum four inch inside diameter. Soil samples will be collected with a 24-inch long, two-inch outside diameter (O.D.) split-spoon sampler at five foot intervals. The split-spoon sampler will be driven with a 140 pound drive weight falling thirty inches. The driving resistance (blow counts) will be recorded for each six inches (6") the sampler is driven. A representative soil sample will be recovered from the sampler with a stainless steel trowel and stored in at least one wide-mouthed eight ounce glass jar for geologic characterization. In addition, one 44ml septum sealed glass vial will be partially filled with soil for OVA headspace analysis. When obstructions cause less than twelve inches (12") per 100 blows, or less than one inch (1") per 50 blows of a standard split-spoon sampler when driven with a 140 pound weight free-falling thirty inches (30"), the driller will attempt to penetrate the obstruction by the use of a roller bit (in dense material) or by coring (for boulders). If the obstruction can not be penetrated, the original location may be abandoned and a new well location will be chosen by the NUS field geologist.

The monitoring well casing will consist of Schedule 80, threaded flush-joint PVC with a nominal pipe size of one and one-half inches inside diameter (1.7 ID).

The screened portion of the casing will consist of slotted PVC with a slot size of not less than 0.010 inches and will have a minimum length of ten feet.

Because split spoon soil samples will be collected at five foot intervals, a ten foot minimum for the well screen is necessary to intercept a zone of contamination detected by OVA field screening.

In shallow bedrock monitoring wells, a minimum of twenty feet (20) will be cored using standard ASTM methods for diamond core drilling. A minimum of twenty feet of bedrock coring was selected because data from previous studies indicated that ten feet of bedrock coring was inadequate to intercept the full zone of surficial bedrock fracturing.

Installation of deep bedrock wells is not anticipated in this study.

For shallow overburden wells, the annular space between the well casing and overburden shall be backfilled with a 60/40 Ottawa sand, or similarly graded sand, to a level approximately one foot (1') above the top of the screen, which will be followed by two foot (2') bentonite seal. For deeper overburden wells, the same procedure will be followed except the Ottawa sand backfill will be followed by a ten foot (10') injected bentonite slurry seal (using a 3:1 ratio of bentonite to cement). The amount of Ottawa sand needed to adequately cover screens will be calculated and then measured as it-is installed. Backfill will be placed in the annulus so that a minimum of one inch (1") of backfill material is between the casing and the natural overburden material.

For wells screened in shallow bedrock, the annular space between the well casing and bedrock shall be backfilled, with the same material used in overburden wells, to a level approximately four feet (4') below the bedrock surface or one foot (1') above the top of the well screen. The Ottawa sand backfill will be followed by a ten foot (10') injected bentonite slurry seal (using a 3:1 ratio of bentonite to cement).

To provide well security, a six inch (6") diameter black steel casing five feet (\mathcal{F}) in length painted with a rust preventative paint shall be placed around the PVC casing and set into a two foot (2") depth of concrete grout. The top of the steel casing shall extend above the inner casing to allow for ease of access, and shall be threaded and fitted with a cap with a 1/4" side vent hole. A hardened steel clasp

shall be welded on one side of each steel casing so that the cap may be secured with a hardened steel lock. The lock identification number will be scratched off. All security casing and caps must be free of all oil or solvents.

placement of groundwater monitoring well screens will be determined in the field based on the stratigraphy encountered and the vertical distribution of volatile organic compounds (as determined by field and in-house screening).

Organic vapor concentrations will be determined with a Century Systems Organic Vapor Analyzer (OVA) 128. Headspace analysis will be performed on soil and drilling wash water samples collected during well installation. Injection of headspace vapors will be made with a gas tight syringe onto an OVA G-24 column. Two modes of operation will be utilized: total organic vapors and gas chromatography. If the initial screen of total organic vapors gives a positive result, a chromatogram will be run and recorded on a strip chart recorder. Organic vapor measurements will be made in the field during drilling and will be part of the health and safety procedures and corresponding action levels. Further detail of the OVA procedure will be provided in a complete operating guideline package at a later date. Whenever possible, soil, groundwater and drilling wash water samples will be collected for volatile headspace analysis on a Photovac gas chromatograph located at EPA-Lexington. Due to its greater sensitivity, this analysis will provide additional data on which to base field decisions.

In those locations where a vertical stratification of organic contamination is apparent, multi-level wells will be installed. Multi-level wells will consist of a cluster of wells screened at appropriate intervals.

Stratification of organic contamination will be defined as the presence of contamination as detected by OVA field screening techniques in zones at least twenty feet apart. Contamination detected in soils less than twenty feet apart (i.e. in split spoon samples ten feet apart) will not necessarily indicate different plumes contamination but rather the same plume of contamination unevenly distributed in the overburden according to the variation in permeability of the

materials encountered. Multi-level wells will also be installed in areas where data concerning vertical hydraulic gradients is needed and will consist of two, three or more individual wells depending on geologic strata encountered, field screening results and study objectives.

After well installation, the drillers will be required to develop the well by purging the well until clear silt-free water is obtained or until recharge is insufficient to continue pumping. Following development and well recovery, the groundwater will be sampled the following day for in-house screening on a photovac gas chromatograph. The screening results will be used to decide whether additional wells need to be installed in key areas as detailed in Section 3.2 (Task 08).

It is anticipated that two drilling rigs will be employed simultaneously to complete the installation of groundwater monitoring within a reasonable time frame. Therefore, the NUS field team will consist of two on-site geologists, each supervising one of the drilling rigs. They will be responsible for collecting and logging split spoon soil samples and overseeing all aspects of well installation. The on-site geologist will also collect soil, drilling wash water and groundwater samples for OVA screening.

An on-site chemist will locate an OVA screening station at a central location to both drilling rigs. The chemist will be responsible for conducting headspace volatile analysis on all samples collected by the on-site geologists. All split spoon soil samples will be screened for volatile contaminants. Additional samples will be screened at the discretion of the supervising geologist. The on-site chemist will also be responsible for ambient air monitoring for health and safety concerns. An additional field technician will be responsible for groundwater sampling after well installation and assisting the rest of the work crew.

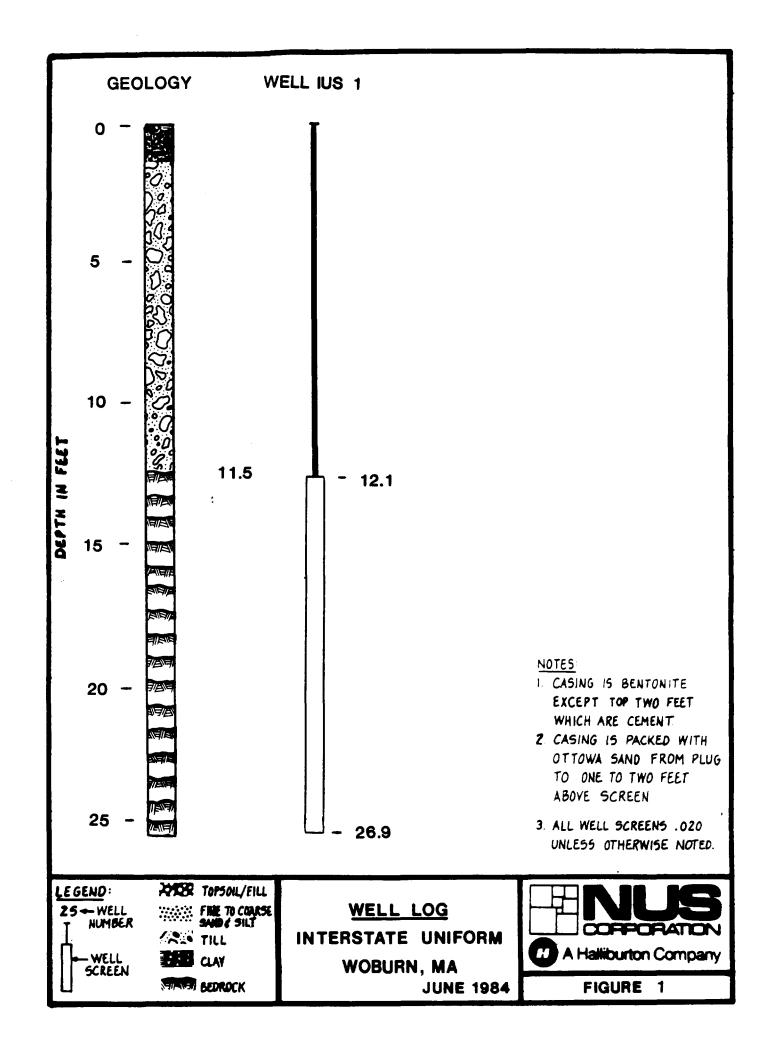
Protective clothing during groundwater well installations will typically include hard hats, neoprene boots, tyveks, inner disposable gloves and outer nitrile gloves. The results of ambient monitoring and OVA headspace analysis will dictate respiratory protection and the need for butyl rubber aprons or other protective equipment.

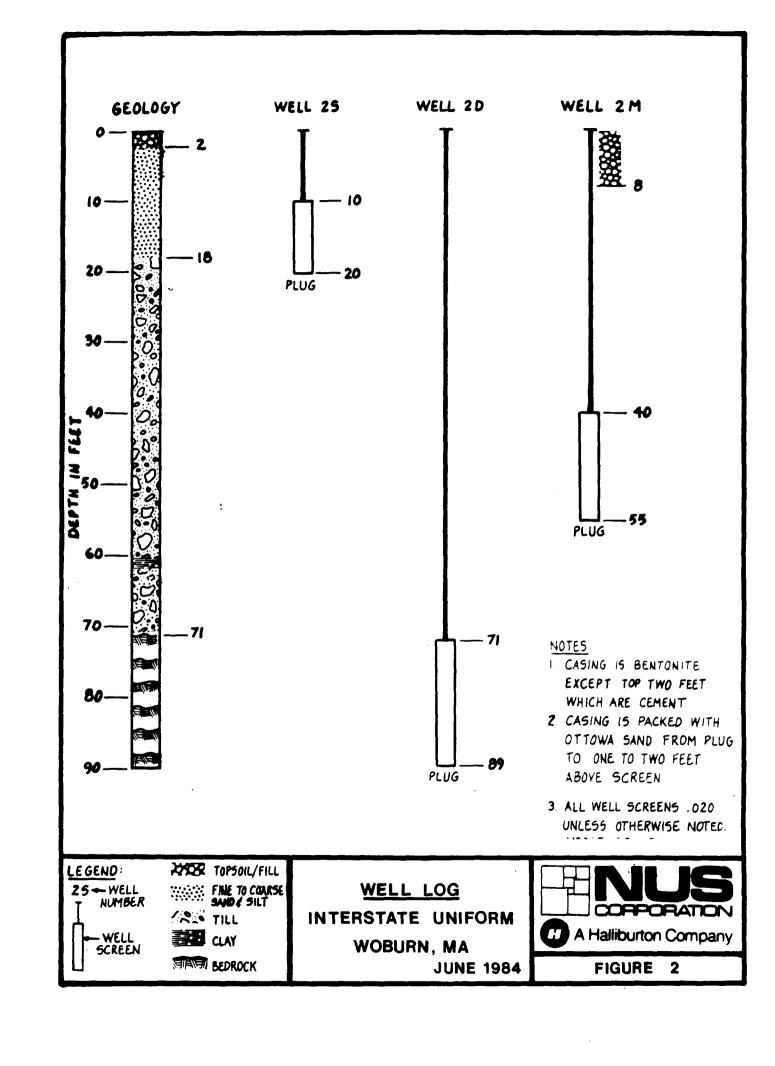
APPENDIX B WELL LOGS FOR NON-NUS/FIT WELLS

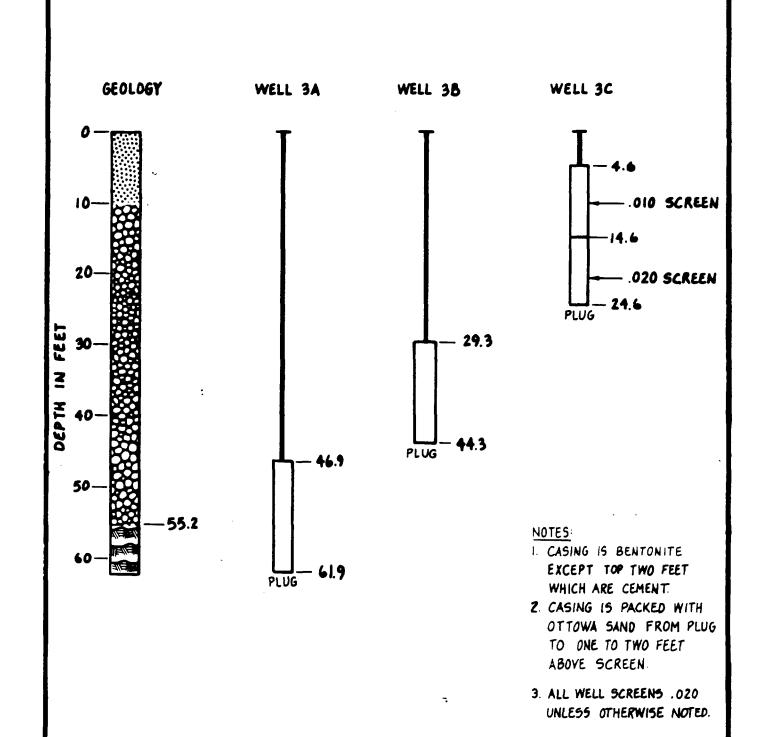
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This appendix contains logs for wells and test borings located in the Wells G & H Remedial Investigation Study area which were installed by other companies than NUS/FIT. The well logs are presented in the following order;

Section	Site	Installed by
1.0	UniFirst Corporation	Environmental Research and Technology, Inc.
2.0	W.R. Grace	Con-Tec., Inc.
3.0	Wildwood Conservation Corporation	Woodward-Clyde Consultants
4.0	Wildwood Conservation Corporation	Weston Geophysical
5.0	East Woburn	Ecology and Environment, Inc.
6.0	Wells G & H Aquifer Test	Atlantic Testing Laboratories, Limited









WELL LOG INTERSTATE UNIFORM WOBURN, MA JUNE 1984



FIGURE 3

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO.-CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MA.

HOLE NO. G15

DATE STARTED

6/22/83

COMPLETED

6/22/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH		DESCRIPTION OF MATERIAL	
					Drilled	without sampling to refusal @ 36	5.5'
							36.51
				- -	BOTTOM	OF BORING	36.51
				,	NOTE:	Installed 39.3' of 2" PVC riser	
						pipe in borehole; bottom 10'	
						section is slotted.	
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO- CRYOVAC DIVISION

LOCATION WASHINGTON ST., WORURN, MA.

HOLE NO. GID

DATE STARTED

6/13/83 COMPLETED 6/17/53

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO-DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

PORTION MADE WITH MY and RY CASTIG

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					TOPSOIL .6'
5.0'					Light brown, moist, medium-dense, fine to medium SAND and fine to coarse GRAVEL, trace silt
		8-13 14-15	1-	5' - 7'	7.0'
10.0*		15-13 13-14	2	'7-9'	Olive-brown, moist, dense to very dense SILT, some embedded fine to coarse gravel, cobbles, little embedded fine to coarse sand
•		21-30 32-37	3	11'-13'	Tittle embedded line to coarse sand
15.0'		31-36 45-54	4	13'-15'	
20.0'		15-36 65-79	5	17'-19'	
<u>25.0'</u>		5-9 33-45	6	24'-26'	Light brown, wet, very dense, medium to fine SAND, some fine to coarse gravel, little silt
30.01					TOP OF ROCK @ 34.5'
					Run - 1 $34.5' - 37.0'$. RQD = 0
					Recovery 1.0' - 40% Weathered broken ROCK 37.0'
35.01	7				NOTE: Set 3" casing to 36.0"
40.01					

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W. R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WOBURN, MA.

HOLE NO.

G10

DATE STARTED

6/13/83

COMPLETED

6/17/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH			DESCRIPTION OF MATERIAL	
			+		Drille	d wi	th roller bit to	37.0'
					Run -	2	37' - 43' RQD = 3	5%
45.01	╂╼╌┼╌				Recove	ry	4.9' - 82%	
					Broken	pir	k-green-gray GRANODIORITE	43.0
	-		+		Run -	3	43' - 47'	
50.01					ł	_	4.3' - 107%	
50.0'			1-1			•	k-green-gray GRANODIORITE	47.D
							47' - 51.5' ROD = 2	
	-		+		ĺ		3.6' - 80%	
55.0'			\Box		1		k-green-gray GRANODIORITE	51.5
ļ								51.5
			\Box					
					NOTE:	1.	Core size = NX	
			-		l	2.	Coring time in rock 5-6 min./f	t:
		- <u> </u>					no water loss.	• •
						3.	Installed 52.5' of 2" PVC rise	r
							pipe in borehole; bottom 10' section is slotted.	
			\Box					
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CON-TEC., INC.

P.O. BOX 1153 CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO.-CRYOVAC DIVISION

HOLE NO. G2S

LOCATION

WASHINGTON ST., WOBURN, MA.

SURF. ELEV.

DATE STARTED

6/14/83

COMPLETED

6/14/83

JOB NO. 8340

GROUND WATER

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_1_OF___

DEPTH	C.	, N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL	
					Drilled without sampling to 19'	
					19	٥.
					BOTTOM OF BORING 19	
					NOTE: Installed 20.6' of 2" PVC riser pipe	
					in borehole; bottom 10' section is slotted.	
			廿			
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CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301

PROJECT W. R. GRACE & CO. - CRYOVAC DIVISION

603-224-0020

LOCATION WASHINGTON ST., WOBURN, MA.

HOLE NO. GEM

DATE STARTED

6/14/83 COMPLETED

6/14/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH 4" CASING SHEET 1 OF 1 DEPTH C SPL. N. SAMPLE NO. DEPTH DESCRIPTION OF MATERIAL Drilled without sampling to refusal @ 28' 28.01 BOTTOM OF BORING 28.01 Installed 29.4' of 2" PVC riser pipe in torehole; bottom 5' section , is slotted.

CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301** 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MA.

HOLE NO. G2D

DATE STARTED

6/10/83

COMPLETED 6/14/83 SURF. ELEV.

GROUND WATER 6/13 - 7a.m. - 7'

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

DODING WARE LITTLE BY AND SHECKSING

BURING .	TADE	WITH 4" AN	T 3	CASING	
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		3-4	1	0-21	TOPSOIL .2'
1.		5-4 4-12	2	2'-4'	
1		13-16	1	27	Brown, dry, loose to dense, fine to coarse SAND, fine to coarse GRAVEL, CCBBLES, BOULDERS
5.0'		23-23	3	4'-6'	little silt 4.0'
		25-40 16 - 37	4	6'-8'	Light brown, dry, dense to very dense, coarse to fine SAND and fine to coarse GRAVEL
		35-27	5	8'-10'	to The Sand and Time to coarse diavage
10.01		13-14 10-12	12	010.	10.0*
		8-10	6A	10'-11.5'	
		10-12		11.5'-12'	Light brown, wet, medium-dense, fine to medium SAND, little fine to medium gravel, trace silt
		11-18	7A	12'-13'	11.5
15.01	-	14-16 8-10	8	13'-14' 14'-16'	Light brown, wet, medium-dense, medium to fine
		11-10			SAND and medium to fine GRAVEL 18.5'
[10-11	9	16'-18'	Light brown, wet, dense to very dense SILT,
 		7-15 14-21	10	18'-20'	fine SAND and embedded fine to coarse GRAVEL
20.01		23-21	10	10 -20	21.5'
		21-33	11	20'-22'	Light gray-brown, moist, very dense SILT,
-		31-37			some embedded fine to coarse gravel, trace
<u> </u>					embedded fine to medium sand 24.0'
25.0					Olive-brown, wet, stiff CLAY, little embedded
		6-5	12	25'-27'	fine to coarse gravel, cobbles
		6-6	┦		Top of Rock @ 29.0'
 					Drilled with rock bit to 29.5'
30.01					Run - 1 29.5' - 34.5' RQD = 87%
F					Recovery 4.6' - 92%
	丁				Gray-green GRANODIORITE with quartz stringers
35 0. F	\Box				34.5'
35.0'	\dashv				Run - 2 34.5' - 39.5' RQD = 100%
F			\vdash		Recovery 5.0' - 100%
40.0	二			;	Gray-green GRANODIORITE with quart 39.5'

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.F. GRACE & CO. - CRYOVAC DIVISON

HOLE NO.

LOCATION WASHINGTON ST., WOBURN, MA.

SSD

DATE STARTED

6/10/83

COMPLETED 6/14/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
			\exists		Run - 3 39.5' - 44.5' RQD = 971
1			+		Recovery 4.8' - 96%
45.01			##		Gray-green GRANODIORITE with quartz stringers 44.5
		:	廿		Run - 4 44.5' - 49.5' RQD = 100%
			+		Recovery 4.3' - 86%
50.0'					Gray-green GRANCDIORITE with quartz stringers 49.5'
•					BOTTOM OF BORING 49.5'
			+		NOTE:
					1. Core size = NX
		· · · · · · · · · · · · · · · · · · ·			 Coring time in rock 3-4 min/ft; no water loss.
}			+		3. Installed 49.9' of 2" PVC riser
					pipe in borehole: bottom 15'
ŀ			+		section is slotted.
<u> </u>					
	 †		+		
}			+		
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-	-+		+		
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. G3S

LOCATION WASHINGTON ST., WOBURN, MA.

DATE STARTED 6/21/83

COMPLETED

6/22/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to refusal @ 37'
					37.0
					BOTTOM OF BORING 37.0
		·			NOTE: Installed 39' of 2" PVC riser pipe in borehole; bottom 15' section is slotted.
			+		
			+		
			+		
	二				
			\Box		
	二				
}			+		
	4				
-					
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CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301** 603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WCBURN, MA. HOLE NO. G3D

DATE STARTED

6/17/83

COMPLETED

6/21/83

SURF. ELEV.

GROUND WATER

6/21 - 7a.m. - 18.5' CASING @ 39.3'

JOB NO. 8340

HOLE € 56.41

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

DODING MADE WITH MY and 3" CASTNO

BOKING I	TADE	WITH 4" an	10 3"	CASING	
DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		4-3	1	0-2'	TOPSOIL .5'
		6-7 3-3 4-21	2A 2B	3'-4'	Brown, dry, loose, fine to coarse SAND, little silt, little fine to medium gravel, trace
5,0'		22-52	13	4'-5'	ashes 4.0°
		31-33 49 :	4	6'-7.5'	Brown, dry, very dense, fine to coarse GRAVEL, some fine to coarse sand
40.01		51	5	8'-8.5'	
10.0'		25-50	6A	10'-11.3'	10.5'
		64/.3		•	Olive-gray, moist, very dense SILT, little fine to coarse sand, little fine to coarse gravel
15.0'					
		20-21	7A	15'-16'	Yellow-gray, dry, dense, fine to coarse SAND, little fine to medium gravel
		19-21 9-26	7B 8	16'-17' 17'-19'	3 u. o.
		38-56		17 - 19	19.0*
20.01		73-50 46	QA.	19'-19.5'	Light brown, wet, very dense, fine to medium SAND, SILT and fine to coarse GRAVEL
ł				i	
25.01					24.0'
25.0		12-10 9-8	10	25'-27'	Light brown, wet, medium-dense, coarse to fine SAND and SILT
}			+		
30.0'					30.0'
ŀ		25 25/00	111	30.5'-31'	Olive-brown, wet, very dense, fine to medium
ŀ		2)/00			SAND, fine to coarse GRAVEL, COBBLES, BOULDERS, little silt
35.0'					TOP OF ROCK @ 38.6'
		717.3	12	35.4'-35.7'	Drilled with rock bit to 39.3'
ŀ					·
40.0'					

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. G3D

LOCATION

WASHINGTON ST., WOBURN, MA.

.

SURF. ELEV.

DATE STARTED

6/17/83

COMPLETED

6/21/83

GROUND WATER SEE PAGE 1

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C.NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
			-		Run - 1 39.3' - 44.3' RQD = 90%
					Recovery 4.9' - 98%
45.01	-		+		Gray-green GRANODIORITE 44.
77.9			\Box		Run - 2 44.3' - 49.3' RQD = 75\$
		:	+		Recovery 4.0' - 80\$
					Gray-green GRANODIORITE 49.
50.0'					Run - 3 49.3' - 53.2' RQD = 128%
					Recovery 4.4' - 113%
	\vdash				Gray-green GRANODIORITE 53.
55.0'					Run - 4 53.2' - 56.4' RQD = 97%
					Recovery 3.7' - 116%
			口		Gray-green GRANODIORITE 56.
60.01			+		Run - 5 56.4' - 61.4' RQD = 97%
017.17					Recovery 4.9' - 98%
					Gray-green GRANODIORITE 61.
					BOTTOM OF BORING 61.
65_0'					NOTE:
					1. Core size = NX
			\dashv		2. Coring time in rock - 5 min/ft.;
					no water loss.
					3. Installed 63.6' of 2" PVC riser
					pipe in borehole; bottom 15' section is slotted.
					3333333
			+-		

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE & CO. - CRYCVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO. G-3DB

DATE STARTED 8/28/84

COMPLETED

SURF. ELEV.

GROUND WATER 6/29 - CASING @ 31'; HOLE @ 36' - 18.9' 9/4 - CASING @ 36'; HOLE @ 89.5' - 21'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

Drilled with roller bit from 32' to 36.0 Set 3" casing to 36' Run - 1	DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
TOP OF ROCK 32.0 Drilled with roller bit from 32' to 36 Set 3" casing to 36' Run - 1 36' - 37.4' RQD - 0 Recovery 1.1' - 79% Light gray, medium grained GRANODIORI 37.4 Drilled with roller bit to 38.0 Run - 2 38' - 44' RQD - 75% Recovery 5.9' - 98% Light gray, medium grained GRANODIORI 50.0' Run - 3 44' - 53.8' RQD - 62% Recovery 9.7' - 99% Light gray, medium grained GRANODIORI 53.8 Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI 60.0'						
Drilled with roller bit from 32' to 36 Set 3" casing to 36' Run - 1 36' - 37.4' RQD - 0 Recovery 1.1' - 79% Light gray, medium grained GRANODIORI' 37.4 Drilled with roller bit to 38.0 Run - 2 38' - 44' RQD - 75% Recovery 5.9' - 98% Light gray, medium grained GRANODIORI' 40.0' Run - 3 44' - 53.8' RQD - 62% Recovery 9.7' - 99% Light gray, medium grained GRANODIORI' 55.0' Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI 50.0' Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI 60.0'	30.0'					
35.0' Set 3" casing to 36' 36.0 Run - 1 36' - 37.4' RQD - 0 Recovery 1.1' - 79% Light gray, medium grained GRANODIORI 37.4 Drilled with roller bit to 38.0 Run - 2 36' - 44' RQD - 75% Recovery 5.9' - 98% Light gray, medium grained GRANODIORI 44.0 Run - 3 44' - 53.8' RQD - 82% Recovery 9.7' - 99% Light gray, medium grained GRANODIORI 55.0' Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI 50.0' Light gray, medium grained GRANODIORI 51.0						TOP OF ROCK 32.0'
Run - 1 36' - 37.4' RQD - 0	35.0'					Drilled with roller bit from 32' to 36 Set 3" casing to 36'
Recovery 1.1' - 79% Light gray, medium grained GRANODIORI 37.4 Drilled with roller bit to 38.0 Run - 2 38' - 44' RQD - 75% Recovery 5.9' - 98% Light gray, medium grained GRANODIORI 44.0 Run - 3 44' - 53.8' RQD - 62% Recovery 9.7' - 99% Light gray, medium grained GRANODIORI 53.8 Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI 60.0'	-					36.0'
Light gray, medium grained GRANODIORY 37.4 Drilled with roller bit to 38.0 Run - 2 36' - 44' RQD - 75% Recovery 5.9' - 98% Light gray, medium grained GRANODIORY 44.0 Run - 3 44' - 53.8' RQD - 82% Recovery 9.7' - 99% Light gray, medium grained GRANODIORY 55.0' Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORY 50.0' Light gray, medium grained GRANODIORY 51.0 Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORY 60.0'						,
#5.0' Brilled with roller bit to 38.0 Run - 2 38' - 44' RQD - 75% Recovery 5.9' - 98% Light gray, medium grained GRANODIORI 44.0 Run - 3 44' - 53.8' RQD - 82% Recovery 9.7' - 99% Light gray, medium grained GRANODIORI 53.8 Run - 4 53.8' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI 60.0'	40.01				•	Light gray, medium grained GRANODIORIT
Recovery 5.9' - 98% Light gray, medium grained GRANODIORI 44.0 Run - 3			<u> </u>			
Recovery 5.9' - 98% Light gray, medium grained GRANODIORI 44.0 Run - 3	45.01			+		Run - 2 38' - 44' RQD - 75%
Run - 3						
Run - 3						Light gray, medium grained GRANODIORIT
Light gray, medium grained GRANODIORI 53.8 Run - 4 53.8' - 63.5' RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI 60.0'	50.0'					Run = 3 44' = 53.8' RQD = 62%
53.8 Run - 4 53.8' - 63.5'. RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI						Recovery 9.7' - 99%
Run - 4 53.8' - 63.5'. RQD - 91% Recovery 9.0' - 93% Light gray, medium grained GRANODIORI						Light gray, medium grained GRANODIORIT
Recovery 9.0' - 93% Light gray, medium grained GRANODIORI	55.0					
60.0'						
						Light gray, medium grained GRANODIORIO
	60.0'	$\overline{}$				
					•	

CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301** 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO.G - 3DB

DATE STARTED

8/28/84

COMPLETED

SURF. ELEV.

GROUND WATER

9/6 - CASING @ 36'; HOLE @ 100'-19.8' 9/7 - 20.5'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_2_ OF - 3

NQ WIR	E L	NE CORE	_		
DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Run - 5 63.5'-69.0' RQD - 100%
					Recovery 5.5'-100%
70.01					Light gray, medium grained GRANODIORITE with quartz and pink feldspar stringers 69.0'
					Run - 6 69.0'-74.0' RQD - 100%
75.0'					Recovery 5.7'-114%
					Light gray, medium grained GRANODIORITE with quartz and pink feldspar stringers 74.0'
80.01					Run - 7 74.0'-80.2' RQD - 32%
00.0					Recovery 6.2'-100%
					Light gray, broken, medium grained GRANODIORITE 80.2'
85.01					Run - 8 80.2'-88.5' RQD - 25%
		·			Recovery 8.3'-100%
90.0'					Light gray, broken, medium grained GRANODIORITE with quartz and pink feldspar stringers 88.5'
					Run - 9 88.5'-94.0' RQD - 85%
					Recovery 5.2'-95%
95.01					Light gray, broken, medium grained GRANODIORITE with quartz and pink feldspar stringers 94.0'
					Run - 10 94.0'-100.0' RQD - 89%
100.0	\dashv	•		,	Recovery 5.5'-92%
					Light gray, broken, medium grained GRANODIORITE with quartz and pink feldspar stringers 100.0'
				· ! !	BOTTOM OF BORING 100.0'

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

HOLE NO. G-3DB

LOCATION WASHINGTON ST., WOBURN, MASS.

COMPLETED

SURF. ELEV.

DATE STARTED 8/28/84

See pg. 1 & 2 GROUND WATER

JOB NO. 8447

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH		DESCRIPTION OF MATERIAL
					Notes:	
					. 1.	Coring time in rock averaged 3 to 6 min/ft.; losing some water in fractures at 55'.
					2.	Installed 96' of 1½" PVC riser pipe in borehole; bottom 15' section is slotted.
·						•
						·
						· .
					·	

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. G4S

LOCATION

WASHINGTON ST., WOBURN, MA.

SURF. ELEV.

DATE STARTED

6/9/83

COMPLETED

GROUND WATER

6/9/83

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL	·
					Drilled without sampling to refusal @ 2	26'
	$\vdash \vdash$		+	e e		26.0
					BOTTOM OF BORING	26.0
					NOTE: Installed 26 51 of 28 BUC stoop	
		:			NOTE: Installed 26.5' of 2" PVC riser pipe in borehole; bottom 10'	
					section is slotted.	
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. GUD

LOCATION WASHINGTON ST., WOBRUN, MA.

DATE STARTED

6/7/83

COMPLETED

6/9/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING	MADE	WITH 4" CA:	SING		
DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
5.0'		3-15 13-20 15-41 200	2	0 -2' 2'-3.5'	Brown, dry, medium-dense to very dense, fine to medium SAND, SILT and coarse to fine GRAVEL, COBBLES, BOULDERS
					7.5'
10.0'		23 30-30	3	9.5'-11.5'	Light brown, wet, very dense, fine SAND, some embedded fine to coarse gravel, little silt
		50-100 110-77 34-90	4	11.7-13.5' 13.7-15.5'	
15.0'		51-60 63-81 150-100	6	ნ <i>5</i> ' -17.5'	
20.01		56 27-35	7	20'-22'	
25.0'		21-100/0	8	24'-24.5'	Gray-brown, wet, dense, coarse to fine SAND and fine to medium GRAVEL, trace silt
					TOP OF ROCK @ 24.5' Run - 1 24.5' - 29.5' RQD = 40%
30.01					Recovery 4.2' - 84% Gray-green GRANODIORITE 29.5'
					Run - 2 29.5' - 34.5' RQD = 63% Recovery 4.2' - 84%
35.0'					Gray-green GRANODIORITE 34.5' Run - 3 34.5' - 39.5' RQD = 87%
40.0'					Recovery 5.0' - 100% Gray-green GRANODIORITE 39.5'

CON-TEC., INC.

P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MA.

HOLE NO. G4D

DATE STARTED

6/7/83

COMPLETED

5/9/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
			\blacksquare		Run - 4 39.5' - 44.5' RQD = 88%
					Recovery 5.3' - 106%
5.01			+		Gray-green GRANODIORITE 44.5
					BOTTOM OF BORING 44.5
	-		+		NOTE:
					1. Core size = NX
					 Coring time in rock 8-10 min/ft; no water loss.
. •					3. Installed 45' of 2" PVC riser
	\vdash				pipe in borehole; bottom 15' section is slotted.
					section is slotted.
	\vdash		+		
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

SURF. ELEV.

HOLE NO. G5S

LOCATION WASHINGTON ST., WOBURN, MA.

DATE STARTED 6/23/83

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

COMPLETED

6/23/83

JOB NO. 8340

GROUND WATER

NINO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_____ OF____1

PORTIO MADE LITTH AN CASTNO

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to refusal@ 21'
			\blacksquare		21.0
			廿		BOTTOM OF BORING 21.0
					NOTE: Installed 24.3' of 2" PVC riser pipe in borehole; bottom 10'
	\vdash				section is slotted.
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CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301** 603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. G5D

LOCATION

WASHINGTON ST, WOBURN, MA.

DATE STARTED

6/9/83

COMPLETED 6/9/83 SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING M	ADE !	WITH 4" CAS	ING		
DEPTH	c	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Brown, dry, SAND, SILT, GRAVEL, COBBLES and BOULDERS
		10		4.5'-6.5'	4.0'
5.0'		10 10-10	1	4.5'-0.5'	Olive-brown, wet, medium-dense, fine to medium
		9-9	2	6.5'-8.5'	SAND, some silt, little embedded fine to medium gravel
}		8-6 . 4-8	3	8.5'-10.5'	
10.0'		10-12 8-5	4	10.5'-12.5'	
		4-15	+-	10.5 - 12.5	
		67 - 8 12 - 17	5	12.5'-14.5'	
15.0'		43-21	6	14.5'-16.5'	
		27 - 27 32=12	7	16.5'-18.5'	
		8-12		10.5' = 10.5'	
20.0		12-100 64-50/0	8	18.5'-19' 19'-19.5'	Top of Rock @ 19.5'
20.0		04-30/0	-	13 13.3	Run - 1 19.5' - 24.5' RQD = 57%
			-		Recovery 4.8' - 96%
					Green-gray GRANDIORITE 24.5'
25.0'					Run - 2 24.5' - 29.5' RQD = 60%
İ					Recovery 4.8' - 96%
					Green-gray GRANDIORITE 29.5'
30.0'					Run - 3 29.5' - 34.5' RQD = 67%
)					Recovery 5.0' - 100%
					Green-gray GRANDIORITE 34.5'
35.01					Run - 4 34.5' - 39.5' RQD = 80%
					Recovery 4.6' - 92%
					Green-gray GRANDIORITE 39.5'
₁₁₀					BOTTOM OF BORING 39.5'
40.0'					

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. GSD

DATE STARTED

6/9/83

LOCATION WASHINGTON ST., WOBURN, MA.

COMPLETED

6/13/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C.NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

EPTH	C.	N.	SPL. NO.	SAMPLE DEPTH		DESCRIPTION OF MATERIAL
					NOTE:	
			\perp		1.	Core size = NX
					2.	Coring time in rock 8-10 min/ft; no water loss.
	-	, , , , , , , , , , , , , , , , , , 	+		3.	Installed 41.5' of 2" PVC riser
		:]	pipe in borehole; bottom 15' section is slotted.
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. G7S

LOCATION WASHINGTON ST., WOBURN, MA.

DATE STARTED

6/23/83

COMPLETED 6/23/83 SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_1	OF1
---------	-----

DEPTH	c	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL	
					Drilled without sampling to 21'	
						21.0
-			\Box		BOTTOM OF BORING	21.0
		:			NOTE: Installed 24.3' of 2" PVC rispipe in borehole; bottom 15' section is slotted.	ser
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MA.

HOLE NO. G7D

DATE STARTED

6/15/83

COMPLETED

6/16/83

SURF. ELEV.

GROUND WATER 6/16 - 7a.m. - 7.0' HOLE € 39'

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH 4" CASING

	_		T		
DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		2-5	1_	0-2'	Brown, dry, medium-dense, fine to coarse
	<u> </u>	9-14	2	2	GRAVEL, COBBLES, some fine to coarse sand,
	├	14-29 33-41		21-41	little silt 2.5'
5.01		37-49	7	4'-6'	Light brown, dry, very dense, fine to coarse
7.0		51-57			GRAVEL and fine to coarse SAND
		50/0 :			
	<u> </u>	30.11	4	8'-10'	Wet @ 8'
10.0	├	29 - 11	-4	9. – 10.	10.0'
10.0	-	12-29	5	10'-11.4'	
		20/.4-50/0			Olive-brown, moist, very dense SILT, some
		18-24	6	12'-14'	embedded fine to coarse gravel, trace embedded fine to coarse sand (occasional 1/8" - 1"
15.0'	<u> </u>	21-27 18-18	7	14'-16' -	layers of fine to medium sand)
15.0		20-59		14'-10' -	
		75/.3-50/0		16'-16.3'	
}				_	•
		29-42	8	18'-20'	
20.0'		29-17			
25.01		29_42	\vdash	24'-25.5'	(Note: No sample recovery 16'-16.3' & 24'-259)
		47	\vdash		Top of rock @ 28.5'
1		_			Drilled with rock bit to 29.5'
30.01					Run - 1 29.5' - 34.5' RQD = 13%
30.01			 		
1 1					Recovery 4.5' - 90%
1					Broken, pink-gray-green GRANODIORITE 34.5'
[Run - 2 $34.5' - 39.0'$ RQD = 37%
35.0'			igwdap		Recovery 4.7' - 104\$
}				4	Broken, pink-gray-green GRANODIORITE 39.0'
				į	•
40.0'					

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MA.

HOLE NO. G7D

DATE STARTED

6/15/83

COMPLETED

6/15/83

SURF. ELEV.

GROUND WATER

SEE PAGE 1

JOB NO.

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C.NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

8340

39' - 44' RQD = 70% 4.4' - 88% een GRANODIORITE 44.0' 44' - 47.8' RQD = 98% 4.7' - 124% gray-green GRANODIORITE 47.8' 47.8' - 51' RQD = 63% 3.2' - 100%
44.0° ## - 47.8° RQD = 98\$ ## - 124\$ ## gray-green GRANODIORITE
##' - 47.8' RQD = 98\$ #.7' - 124\$ gray-green GRANODIORITE
4.7' - 124% gray-green GRANODIORITE
gray-green GRANODIORITE 47.8' 47.8' - 51' RQD = 63%
47.8' - 51' RQD = 63%
•
· · · · · · · · · · · · · · · · · · ·
gray-green GRANODIORITE 51.0'
RING 51.0°
,
e size = NX
ing time in rock 2-3 min/ft; water loss.
talled 52.8' of 2" PVC riser
e in borehole; bottom 15'
tion is slotted.
<i>;</i>
•

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. GROW

LOCATION

WASHINGTON ST., WOBURN, MA.

DATE STARTED

6/24/83

COMPLETED

6/30/83

SURF. ELEV.

GROUND WATER

JOB NO. 8340

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1 PORTNG MADE WITH 4" CASING SPL. SAMPLE DEPTH C. N. DESCRIPTION OF MATERIAL NO. DEPTH Drilled without sampling to refusal @ 44' Cored boulders from 17' - 26' 44.0' BOTTOM OF BORING 44.01 NOTE: Installed 45.5' of 2" PVC riser pipe in borehole; bottom 10' section is slotted.

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301

PROJECT W.R. GRACE & CO. - CRYGVAC DIVISION

603-224-0020

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO. G-93

DATE STARTED 8/28/84

COMPLETED SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 6.0'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET______ OF_____

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to refusal @ 18'
					Installed 17.6' of 2" PVC riser pipe in borehole; bottom 5' section is slotted
					•
					18.0'
					•

CON-TEC., INC. . P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE & CO. - CRYCVAC DIVISION

HOLE NO. G-105

LOCATION WASHINGTON ST., WOBURN, MASS.

9/10/84 DATE STARTED

SURF. ELEV.

GROUND WATER 9/11 - 7am - 6.0'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

COMPLETED 9/11/84

SHEET_1 OF 1

BORING	MAI	DE WITH 4	' CA	SING	
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		2-9 13-16	1	0-2'	Light brown, dry, loose medium to fine SAND .5'
5.0		14-11 29-50/0 32-39 44-28	3	2'-3.5' 4'-6'	Tan, dry, medium dense to very dense fine SAND, SILT and fine to coarse GRAVEL, COBBLES 4.0'
		16-18 : 12-12 11-11	5	6'-8' 8'-10'	Light brown, dry, very dense fine to coarse SAND and fine to coarse GRAVEL 6.0'
10.0'		12-17 14-16 19-21 18-24		10'-12'	Light brown, moist, medium dense to dense SILT, little embedded fine to medium sand, trace embedded fine to
15.0'		32-39 22-28 31-47	8	14'-16'	coarse gravel, cobbles
20.0		29-38 75/.4 22-28		16'-17.4' 18'-20'	
20.0		36-47 28-38 44-51	11	20'-22'	TOP OF ROCK 22.0'
					Drilled with roller bit 25.0'
_				·	BOTTOM OF BORING 25.0'
`			/		Note: Installed 26.2' of 2" PVC riser in borehole; bottom 10' section is slotted.

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301

PROJECT W.R. GRACE & CC. - CRYOVAC DIVISION

603-224-0020

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO.G-10D

DATE STARTED 9/17/84

COMPLETED 9/19/84

SURF. ELEV.

GROUND WATER 9/24 - 7.1'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to top of rock @ 22.0'
					Run - 1 22.2' - 24.5' RQD - 30%
25.01					Recovery 2.0' - 87%
					Gray, fine grained GRANODIORITE with occasional quartz stringers 24.5'
30.0'					Run - 2 24.5' - 34.3' RQD - 65%
30.0					Recovery 9.3' - 95%
					Gray, fine grained GRANODIORITE with occasional quartz stringers 34.34
35.01					Run - 3 34.3' - 35.0' RQD - 0
•		 	-		Recovery 0 35.0'
					*Run - 4 35' - 36' RQD - 31%
40.01			+		Recovery 1.6' - 160%
					Gray, fine grained GRANODIORITE with occasional quartz stringers 36.0'
}			+		Run - 5 36' - 44.5' RQD - 50%
45.01					Recovery 8.2' - 96%
					Gray and pink medium to coarse grained GRANODIORITE with quartz stringer 44.5'
-				•	BOTTOM OF BORING 44.5'
					*1. Core broken while drilling
					2. Coring time in rock averaged 3 to 6 mir/ft; no water loss.
					3. Installed 47' of 1%" PVC riser pipe in borehole; bottom 15' section is slotted.

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. G-10DB

LOCATION WASHINGTON ST., WOBURN, MASS.

DATE STARTED 9/11/84 **COMPLETED** 9/17/84

SURF. ELEV.

GROUND WATER

9/24 - 7.1'

JOB NO. 8447

9/12 - 7am - 7.1' 9/14 - 7am - 6.6'

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING	AM	DE WITH 4	'' &	3" CASING;	NQ WIRE LINE CORE
DEPTH	Ċ	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to top of rock # 23.0'
25.01					Run - 1 23.7' - 29.5' RQD - 25%
27.0					Recovery 5.6' - 97%
		:			Gray, fine grained GRANODIORITE with occasional quartz stringers 29.5'
30.0					Run - 2 29.5' - 34.0' RQD - 49%
					Recovery 4.7' - 104%
					Gray, fine grained GRANODIORITE with occasional quartz stringers 34.0
35.01					Run - 3 34.0' - 42.9' RQD - 38%
					Recovery 8.7' - 98% ·
					Gray, fine grained GRANODIORITE with occasional quartz stringers 42.9'
40.0					Run + 4 42.9' - 49.5' RQD - 73%
					Recovery 6.3' - 95%
45.0	,				Gray, fine grained GRANODIORITE with occasional quartz stringers 49.5'
					Run - 5 49.5' - 54.5' RQD - 47%
					Recovery 5.1' - 102%
50.0					Gray to pink, fine to coarse grained GRANODIORITE with quartz stringers 54.5
					hun - 6 54.5' - 64.4' RQD - 56%
55.0					Recovery 10.0' - 101%
75.0					Gray and pink medium grained to coarse grained GRANODIORITE
60.0					

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

_

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO. G-1003

DATE STARTED 9/11/84

COMPLETED 9/17/84

SURF. ELEV.

GROUND WATER See pg. 1

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 3

NQ WIR	E LI	NE CORF	, , ,		
DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
j					64.4
65.01					Run - 7 64.4' - 74.2' RQD - 70%
}		<u>:</u>			Recovery 9.6' - 98%
70.0'					Gray and pink, medium grained to coarse grained GRANODIORITE with occasional quartz stringers
			##		74.2'
75.01			\pm		Run - 8 74.2' - 83.7' RQD - 61%
		<u> </u>	+	•	Recovery 9.9' - 104%
80.0					Gray and pink, medium grained to coarse grained GRANODIORITE with occasional quartz stringers
					83.7'
85.0			+		Run - 9 63.7' - 93.6' RQD - 70%
			口		Recovery 9.9' - 100%
90.01					Gray and pink, medium grained to coarse grained GRANODIORITE with occasional quartz stringers
			1		
			口		93.61
95.0					Run - 10 93.6' - 100' RQD - 91%
			+		Recovery 6.4' - 100%
					Gray and pink, medium grained to coarse grained GRANODIORITE with
100.0			+		occasional quartz stringers 100.0'

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT

W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO.G-10DB

DATE STARTED

9/11/84

COMPLETED 9/17/84

SURF. ELEV.

GROUND WATER See pg. 1

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 3 OF 3

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
100.0'					100.0
					BOTTOM OF BORING 100.0
					-
- i					Note:
					l. Coring time in rock averaged 3 to 6 min/ft.; no water loss.
					2. Installed 72.4' of 1½" PVC riser pipe in borehole; bottom 15' section is slotted.
			#=		·
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CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301** 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO. G-11S

DATE STARTED 8/30/04

COMPLETED 9/1/84

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 17.0'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_1 OF 1

BORING	MAI	DE WITH 4	' &	3" CASING	
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
0.0'		2-3 17-15	1	0-21	Brown, dry, medium dense SILT, fine SAND and COBBLES 3.0'
		7-8 5-11			TOPSOIL 4.0'
5.0'		5-110 103/.4 :	3	4'-5' 5'-5.4'	Light brown, dry, medium dense to very dense, fine to medium SAND and fine to coarse GRAVEL, COBBLES, little silt
10.0		80-75/.4	5	10'-10.9'	Light gray, moist, very dense SILT and fine SAND, trace embedded fine to medium gravel
				18	14.0'
15.0'		50-86	6	15'-16'	Light brown, moist, very dense SILT and fine SAND, trace embedded fine to medium gravel
20.01		25-100/.1	7	20'-20.6'	21.0'
		2)-104.1		20 -20.0	BOTTOM OF BORING 21.0'
25:0'					Note: Installed 22' of 2" PVC riser pipe in borehole; bottom 5' section is slotted.
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CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

HOLE NO. G-11D

LOCATION WASHINGTON ST., WOBURN, MASS.

TOTAL GALLE

DATE STARTED 9/4/84

COMPLETED

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 17.0'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_____ OF_____

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to refusal @ 24.0'
					TOP OF ROCK 24.0
25.0'		•			Drilled with roller bit to 30'.
20.01		-			-
30.01					Run - 1 30' - 35' RQD - 60
					Recovery 5.0' - 100%
35.0					Gray and pink, medium to coarse. grained GRANODIORITE with occasional quartz stringers 35.0
		-			Run - 2 35' - 40' RQD - 69
					Recovery 3.6' - 72%
40.0			目		Gray and pink, medium to coarse grained GRANODIORITE with occasional quartz stringers 40.0
					Run - 3 40' - 44' RQD - 85
45.0			+-		Recovery 4.8' - 120%
					Gray and pink, medium to coarse grained GRANODIORITE with occasional quartz stringers
					BOTTOM OF BORING : 44.0
					Note: 1. Coring time in rock 5 to 9 min/ft.; slight water loss.
					2. Installed 45' of 1½" PVC riser pipe in borehole; bottom 15' section is slotted.

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

LOCATION WASHINGTON ST., WOBURN, MASS.

DATE STARTED 9/17/84 COMPLETED 9/18/84

CNO. OF BLOWS TO DRIVE

GROUND WATER DEPTH ON COMPLETION - 18.5'

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_1__OF_1

CON-TEC., INC. P.O. BOX 1153

HOLE NO. G-12S

603-224-0020

SURF. ELEV.

JOB NO. 3447

CONCORD, N.H. 03301

BORING	MAD	E WITH 4'	' CA	SING		•
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATE	RIAL
					Drilled without sampling	to refusal
	-				TOP OF ROCK	25.01
		:			BOTTOM OF BORING	25.01
					Note: 1. First attempt that refusal at hole 2' South.	
					 Installed 28' o pipe in borehol section is slot 	e; bottom 10'
·						•
	1					

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

W.R. GRACE & CO. - CRYOVAC DIVISION PROJECT

HOLE NO. G-12D

WASHINGTON ST., WOBURN, MASS.

DATE STARTED 9/12/84

COMPLETED 9/14/84

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 17.5'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		3-10 15-14	1	0-21	TOPSOIL .5'
5.0'		15-16 7-6 2-76	2 3A	2'-4' 4'-4.5'	Light brown, dry, dense fine to medium SAND, little fine to medium gravel, little silt 4.0'
		38 16 - 75/.3	3B 4	4.5'-5.5' 6'-6.9'	Brown, moist, loose SILT, trace fine to medium sand 4.5'
10.0'		49-100	5	10'-11'	Light brown, dry, very dense fine to medium SAND, trace fine to medium gravel 5.5'
15.0'					Light gray-brown, dry, very dense fine to coarse SAND, trace fine to medium gravel 8.5
15.0		42-90 62-50	6	15'-17'	Gray, moist, very dense fine to coarse SAND and SILT, trace fine to medium gravel 14.0'
20.0!		32-70 85-85	7	20'-22'	Light brown, moist, very dense fine to medium SAND and SILT, little embedded fine to medium gravel 18.0'
05.01					Light brown, wet, very dense fine to medium SAND, trace fine gravel
25.0'		100/.5	8	25'-25.5'	TOP OF ROCK 25.5'
					Drilled with roller bit to 27.5'
30.0'					Run - 1 27.5' - 32.5' RQD - 100% Recovery 4.0' - 80%
. }				:	Gray, fine grained GRANODIORITE 32.5'
					Run = 2 32.5' = 36.5' RQD = 98%
35.01					Recovery 4.8' -120%
					Gray, medium grained GRANODIORITE 36.5'
					Run - 3 36.5' - 41.5' RQD - 93%
40.01					Recovery 4.2' - 84%

PROJECT W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MASS.

DATE STARTED 9/12/84

CNO. OF BLOWS TO DRIVE

COMPLETED 9/14/84

GROUND WATER DEPTH ON COMPLETION - 17.5'

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CASING 12" W/300 LB. WEIGHT FALLING 24"

HOLE NO. G-12D

CON-TEC., INC.

CONCORD, N.H. 03301

P.O. BOX 1153

SURF. ELEV.

603-224-0020

JOB NO. 8447

	NX COR	E		بستوند التوسير		SHEET_2 OF_2
	DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
						Gray, medium grained GRANODIORITE 41.5'
	45.0'		÷			Run - 4 41.5' - 46' RQD - 68% Recovery 4.7' - 104% Gray, medium grained GRANODIORITE 46.0'
						BCTTCM OF BCRING 46.0'
•						Note: 1. Coring time in rock 3 to 6 min/ft.; no water loss. 2. Installed 49' of 1½" PVC riser pipe in borehole; bottom 10' section is slotted.
•						
						•

CON-TEC., INC. . P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. GO-1S

LOCATION WASHINGTON ST., WOBURN, MASS.

DATE STARTED 10/3/84 COMPLETED 10/4/84

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 14.5'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____ OF____

BORING MADE WITH 4" CASING SPL SAMPLE DESCRIPTION OF MATERIAL DEPTH DEPTH NO. Drilled without sampling to refusal € 18.0' 18.0' TOP OF ROCK 18.0' BOTTOM OF BORING Installed 20.5' of 2" PVC Note: riser pipe in borehole; bottom 10' section is slotted.

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. GO-1D

LOCATION WASHINGTON ST., WOBURN, MASS.

DATE STARTED 10/1/84

COMPLETED 10/4/84

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 14.5'

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING	MAD	E WITH 4	'' &	3" CASING;	NQ WIRE LINE CORE
DEPTH	c	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to top of rock
					19.0'
20.01			-		Run - 1. 19.0' - 25.1'
		:			Recovery 5.9' - 97%
25.01					Light gray, medium grained GRANODIORITE 25.1'
					Run - 2 25.1' - 30.3'
	-				Recovery 5.3' - 102%
30.01				•	Light gray, medium grained GRANODIORITE 30.3'
}					Run - 3 30.3' - 38.0'
					Recovery 7.8' - 101%
35.01					Light gray, medium grained GRANODIORITE 38.0'
					Run - 4 38.0' - 39.3'
		· · · · · · · · · · · · · · · · · · ·			Recovery 1.2' - 92%
40.01					Light gray, medium grained GRANODIORITE
			-		BOTTOM OF BORING 39.3'
					Note: 1. Coring time in rock 3 to 6 min/ft.; no water loss.
		•			2. Installed 42' of 14" PVC
					riser pipe in borehole; bottom 15' section is slotted.
					·

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301

W.R. GRACE & CO. - CRYOVAC DIVISION PROJECT

603-224-0020

LOCATION

WASHINGTON ST., WOBURN, MASS.

HOLE NO. GO-1DB

DATE STARTED 9/25/84

COMPLETED 10/1/84

SURF. ELEV.

JOB NO. 8447

9/26 - 14.3' CASING & 19'; HOLE & 34.5'

GROUND WATER 9/27 - 14.0' CASING & 19'; HOLE & 60.5'

10/1 - 14.1' CASING & 19'; HOLE & 60.5'

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

40.0

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		3-11	1	0-2'	TOPSOIL .3'
5.01		19-18 26-24 30-41 26-34	2 3A	2'-4'	Light brown, dense to very dense fine to coarse JRAVEL and medium to fine SAND 4.0
		39-48 46-56 75/.3	3B	6'-7.3'	Light gray-green, moist, very dense SILT and fine SAND, little embedded fine to coarse gravel
10.0'		29-56 75/·3	5	10'-11.3'	13~0.
15.0'		12-16 12-12	6	15'-17'	Light brown, wet, medium dense fine to medium SAND, little embedded fine to coarse gravel, trace silt
20.01			 		TILL 19.0' Drilled in rock with roller bit to 19.3'
_					Run - 1 19.3' - 26.8' RQD - 32% Recovery 7.3' - 97%
25.01			 		Light gray, medium grained GRANODIORITE 26.8
					Run - 2 26.8' - 34.5' RQD 70% Recovery 7.7' - 100%
30.0					Light gray, medium grained GRANODIORITE 34.5
35.0					Run - 3 34.5' - 44.4' RQD - 90% Recovery 9.7' - 98% Light gray and pink coarse grained

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

W.R. GRACE & CO. - CRYOVAC DIVISION

LOCATION WASHINGTON ST., WOBURN, MASS.

HOLE NO. GO-1DB

DATE STARTED 9/25/84

COMPLETED 10/1/84

SURF. ELEV.

GROUND WATER See pg. 1

JOB NO. 8447

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					ं सस ं स
45.0'					Run - 4 44.4' - 49.1' RQD - 100% Recovery 4.2' - 89%
50.01					Light gray and pink coarse grained - GRANODIORITE 49.1'
50.01					Run - 5 49.1' - 54.5' RQD - 66%
					Recovery 5.6' - 96%
55.0'			日		Light gray and pink coarse grained GRANODIORITE 54.5'
					Run - 6 54.5' - 60.6' RQD - 62%
			\blacksquare		Recovery 5.5' - 90%
60.01					Light gray and pink coarse grained GRANODIORITE 60.6'
ĺ			+		Run - 7 60.6' - 70.6' RQD - 74%
	#				Recovery 9.9' - 99%
65.0	#		目	e ÷	Light gray and pink coarse grained GRANODIORITE
_70.0				·	70.6
					BOTTOM OF BORING 70.6
75.0					Note: 1. Coring time in rock 3 to 6 min/ft.; No water loss.
,,,,,					2. Installed 73' of 14" PVC riser pipe in borehole; bottom 15' section is slotted

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLENO. Manhole

DATE STARTED 10/10/85

LOCATION WASHINGTON STREET - WOBURN, MA

SURF. ELEV.

COMPLETED 10/10/85

GROUND WATER

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING	MAD	E WITH 4	" CAS	SING	
DEPTH	C.	N.	SPL. NO.		DESCRIPTION OF MATERIAL
					Pump manhcle dry;
	'				Recovered sledge sample from bottom
5.0'					
			1		Bottom of Manhole 7.5
10 01		5-38	1	8'-10'	CONCRETE 8.0'
10.0'		33-28 25-43 66-43	2	10'-12'	Light brown, wet, medium dense, coarse to fine SAND 8.5'
		00.40			Olive-brown, moist, very dense SILT, little embedded fine to
15.0'					coarse gravel, trace embedded
		22-26 26-34	3	15'-17'	fine to medium sand
20.01					
ŀ		50-77 125/-4	4	20'-21.4'	21.4'
					BOTTOM OF BORING 21.4'
25.01					
	\dashv				Note: Hole sealed with bento- nite-cement grout from
					7.5' to 21.4'.
			 		
		· · · · · · · · · · · · · · · · · · ·			
			+		•

CON-TEC., INC.

P.O. BOX 1153

CONCORD, N.H. 03301 603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO.

138

LOCATION

WASHINGTON STREET - WOBURN, MA

DATE STARTED 9/25/85

COMPLETED 9/26/85

SURF. ELEV.

GROUND WATER

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

CNO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to 27.5'
					Installed 29.5' of 2" PVC ris- er pipe in borehole; bottom 10' section is slotted.
i					
					•
					·

CON-TEC., INC.

P.O. BOX 1153

CONCORD, N.H. 03301

W.R. GRACE CO. - CRYOVAC DIVISION

603-224-0020

LOCATION

WASHINGTON STREET - WOBURN, MA

HOLE NO. 13D

DATE STARTED 9/12/85

PROJECT

COMPLETED 9/25/85

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 16.0'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH 4" CASING: NX CORE

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		27-7	1	0-2'	ASPHALT .2'
		11-10 8-10 22-45	2	2'-4'	Light brown; dry, medium dense, fine to medium SAND, trace fine gravel, trace silt 3.0'
5.0'		50-76 120/.4	3	4'-5.4'	Light brown, dry, very dense
		100-100/.4	4	6'-6.9' 8'	coarse to fine SAND, some medium to fine gravel, occasional cobbles, trace silt 6.0'
10.0'		22-31	5	10'-12'	Gray, dry, very dense, fine to meidum SAND, some coarse to fine
		50-46 30-100/.4	6	12'-12.9'	gravel, cobbles, little silt
15.0'		47-52 100/•4	7	14'-15.4'	
		37-68 100/.4	8	16'-17.4'	
20.01		87-64 75/.4 16-42	9	18'-19.4' 20'-21.4'	
		75/.4		20 -21.4	
25.0'		34.85/4	13		TOP OF ROCK @ 25.8'
		14-75/.4	7.	25'-25.9'	Run - 1 29.0' - 32.6' RQD-69%
30.0'					Recovery - 3.5' - 97% 32.6' Run - 2 32.6' - 42.5' RQD-86%
					Recovery 9.2' - 93%
25 01					
35.0'					
40.0'					

CON-TEC., INC.

P.O. BOX 1153

CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO.

13D

LOCATION

WASHINGTON STREET - WOBURN, MA

DATE STARTED 9/12/85

COMPLETED 9/25/85

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 16.0'

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					42.5
					Run - 3 42.5' - 52.2' RQD-98%
45.01		· · · · · · · · · · · · · · · · · · ·			Recovery - 10.0' - 103%
50.0'					
					52.2
·					BOTTOM OF BORING 52.0
55.0'		Note: l. Coring time in rock averaged 4 to 6 min/ ft; no water loss.			
					2. Rock type- Gray, me- dium-grained GRANOD- IORITE
					3. Installed 55.5' of l½" PVC riser pipe in borehole; bottom 15' section is slotted.
·					

CON-TEC., INC. P.O. BOX 1153

SURF. ELEV.

CONCORD, N.H. 03301

W.R. GRACE CO. - CRYOVAC DIVISION 603-224-0020 PROJECT

WASHINGTON STREET - WOBURN, MA HOLE NO. 14D LOCATION

COMPLETED 10/3/85

GROUND WATER JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1__ OF___2__

DATE STARTED 10/1/85

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		26-11	1	0-2'	ASPHALT .2'
5.0'		8-10 10-10 11-15 45-98	2	2'-4' 4'-6'	Light brown, dry, medium dense, fine SAND, trace fine to medium gravel 2.0
		105-99 125-132/.3	4	6'-6.8'	Light brown, dry, medium dense to very dense, fine to medium SAND, little to some fine to
10.0'		15-12 11 - 9	5	8'-10'	coarse gravel 7.0'
·		17-15 13-17 14-19 22-21	7	10'-12'	Light gray-brown, moist, medium to dense SILT and fine SAND, lit-tle embedded fine to medium gravel 14.0'
15.0'		13-25 92-33 38-40 87-120 50/0	9	14'-16' 16'-18' 18'	Light gray-brown, moist, very dense, SILT, little embedded fine to coarse gravel, little embedded ed fine sand
20.0'		18-17 13-9	10	20'-22'	TOP OF ROCK 22.7
25.0'					Run - 1 22.7' - 30.7' RQD-60% Recovery 7.9' - 99%
30.01					30.7
					Run - 2 30.7' - 39.7' 'RQD-83%
35.01					Recovery 9.0' - 100%
40.0'					39.7

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 14D

LOCATION

WASHINGTON STREET - WOBURN, MA

_ -

DATE STARTED

10/1/85

COMPLETED 10/3/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____2__ OF____2

45.01	DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
BOTTOM OF BORING Note: 1. Coring time in rock averaged 5 to 8 min/ft; no water loss. 2. Gray, medium-grained GRANODIORITE 3. Installed 45.4' of 1½" PVC riser pipe in borehole; bottom 15' sect-						Run - 3 39.7' - 42.7' RQD-57%
Note: 1. Coring time in rock averaged 5 to 8 min/ft; no water loss. 2. Gray, medium-grained GRANODIORITE 3. Installed 45.4' of 1½" PVC riser pipe in borehole; bottom 15' sect-	45 01					Recovery 2.8' - 93% 42.7
eraged 5 to 8 min/ft; no water loss. 2. Gray, medium-grained GRANODIORITE 3. Installed 45.4' of 1½" PVC riser pipe in bore- hole; bottom 15' sect-	45.0					BOTTOM OF BORING 42.7
GRANODIORITE 3. Installed 45.4' of 1½" PVC riser pipe in bore- hole; bottom 15' sect-				:		eraged 5 to 8 min/ft;
PVC riser pipe in bore- hole; bottom 15' sect-						2. Gray, medium-grained GRANODIORITE
						PVC riser pipe in bore- hole; bottom 15' sect-
	:					
· - - - - - - - - - - - - - - - - - - - - - - 						

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W.R. GRACE CO. - CRYOVAC DIVISION 603-224-0020 PROJECT

LOCATION WASHINGTON STREET - WOBURN, MA **HOLE NO.** 15S

DATE STARTED 10/2/85 **COMPLETED** 10/2/85 SURF. ELEV.

JOB NO. 8563 **GROUND WATER**

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET______ OF_________

BORING MADE WITH HOLLOW STEM AUGER CASING SPL. SAMPLE DESCRIPTION OF MATERIAL

DEPTH	C.	N.	NO.	DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to 24.5'
	-		ļ		
	-				
	-				
	\vdash				Installed 23.5' of 2" PVC riser
	-		 		pipe in borehole; bottom 10' sec-
	-				tion is slotted.
	\longrightarrow		L		
	\sqcup	:			
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION

WASHINGTON STREET - WOBURN, MA

HOLE NO. 15D

DATE STARTED

9/26/85

COMPLETED 10/1/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1__ OF___2___

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		4	1	.5'-1.1'	CONCRETE .5
		75/.1 12-15 12-27	2	2'-4'	Brown, dry, loose, SILT and fine SAND 1.1
5.0'		25-46	3	4'-5.1'	CONCRETE 1.8
,		75/.1 54-50 43-38	4	6'-8'	Light brown, dry, medium to dense, fine to medium SAND, little fine
		18-12	5	8'-10'	to coarse gravel, cobbles 4.0
10.0'		8-10 18-75 110-77	6	10'-12'	Light gray-brown, dry, very dense SILT and fine to medium SAND, lit-
		69-97 89	7	12'-13.5'	tle embedded fine to coarse grav- el, occasional cobble 8.0
15.0'		28-30	8	14'-16'	Light gray-brown, moist, medium
		32-43 38-43 44-48	9	16'-18'	dense to very dense SILT, little embedded fine to coarse gravel, little embedded fine sand
20.0'		85-75/.4	10	18'-18.9'	Tittle embeoded line sand
20.0		18-23 26-38	11	20'-22'	
		20-38			TOP OF ROCK 23.9
25.0'					Run - 1 26.1' - 31.1' RQD-37%
					Recovery 4.7' - 94%
30.0'					
				1	31.1
					Run - 2 31.1' - 40.5' RQD-61%
35.0'					Recovery 9.7' - 103%
. [
40.0			 	Ì	

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CONCORD, N.H. 03301

603-224-0020

LOCATION WASHINGTON STREET - WOBURN, MA

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 15D

DATE STARTED 9/26/85 **COMPLETED** 10/1/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					40.5
					Run - 3 40.5' - 46.5' RQD-53%
					Recovery 6.0' - 100% 46.5
					BOTTOM OF BORING 46.5
					Note: 1. Coring time in rock av- eraged 1 to 3 min/ft; no water loss.
					2. Rock type- gray, medium- grained GRANODIORITE
					3. Installed 46.5' of 1½" PVC riser pipe in bore- hole; bottom 15' sect-
					ion is slotted.
					·

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603-224-0020

PROJECT

LOCATION

W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO. B-16S

DATE STARTED

10/12/85

COMPLETED 10/22/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1__ OF___1

BORING MADE WITH 4" CASING SPL. SAMPLE **DESCRIPTION OF MATERIAL** DEPTH C. N. NO. DEPTH 17-18 0-2 ASPHALT 14-14 Olive-brown, dry, medium dense, 2'-4' 8-8 fine SAND, SILT and coarse to 13-25 5.0 fine GRAVEL, trace cobbles 4.01 13-8 4'-6' 8**-**5 Light brown, wet, medium dense, 6'-8' 4-7 fine to medium SAND, trace fine 18-13 to medium gravel, occasional cob-8'-10' 10-30 bles, trace silt 10.01 27-11 5 10'-12' 5-712.01 <u>8-10</u> 30-45 12'-13.8' 6 Light brown, moist, very dense, 51**-**75/.3 fine to medium SAND, little em-15.01 75/0 14' bedded fine to coarse gravel, 69-73 15'-17' cobbles, little silt 25-41 18.0' 75/.4 8 17'-17.4' COBBLES @ 18' to 20' 75/0 20.01 19: 20'-22' Gray, moist, very dense SILT, 30-43 little embedded fine to coarse 55-27 gravel, cobbles, trace embedded fine to medium sand 25.01 27-75/-4 110 25'-25.9' TOP OF ROCK 29.6' 30-01 DRILLED WITH ROLLER BIT TO 32.01 32.0' BOTTOM OF BORING Note: 1. No sample recovered at at 0-2'. 2. Installed 30' of 2" PVC riser pipe in borehole; bottom 10' section is slotted.

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603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO. 160

LOCATION

DATE STARTED 10/25/85 **COMPLETED** 10/29/85

SURF. ELEV.

GROUND WATER 10/29- 7A.M. - 7.0' Hole @ 47.8'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF N	IATERIAL
35.0'					Drilled without sampat 37.5'	pling to rock
						37.5'
			+ +		Run - 1 37.8* - 38	8.81 RQD-0%
40.01					Recovery 1.0' - 10	39.01
				Ī	Run - 2 38.81 - 4	7.8' RQD-91%
					Recovery 8.91 - 99	9% 47.8'
45.0'				Ī	Run - 3 47.8' - 5'	7.3' RQD-75%
}				j	Recovery 8.1' - 8	5% 57.3'
					Run - 4 57.3' - 60	0.0' RQD-137%
50.0'					Recovery 4.1' - 1	52% 60.0'
					BOTTOM OF BORING	60.0'
55.0					Note: 1. Coring time eraged 3 no water	to 5 min./ft;
60.01						- Gray, medium RANODIORITE
					PVC riser	59.5' of $1\frac{1}{2}$ " pipe in bore; tom 15' sec- lotted.
					•	

CON-TEC., INC. P.O. BOX 1153

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603-224-0020

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. 8-178

DATE STARTED

PROJECT

10/17/85 **COMPLETED** 10/18/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

W.R. GRACE CO. - CRYOVAC DIVISION

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1__ OF___1__

DEPTH	c.	N.	SPL.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to 49.5
					brilled without sampling to 49.5
					Installed 47' of 2" PVC riser pipe
					in borehole; bottom 10' section is slotted.
	-		+ -		510ccca.
					
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603-224-0020

LOCATION

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO. 17D

DATE STARTED

10/11/85 **COMPLETED** 10/17/85

SURF. ELEV.

GROUND WATER

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		11-9	1	0-2'	ASPHALT .2
		8-12 13-27	2	2'-4'	Olive-brown, moist, medium dense
5.0		33-42 20-40	3	4'-6'	SILT, little embedded fine to me- dium gravel, little embedded fine
		40-47 17-20	4	6'-8'	Sand 2.0 Olive-brown, moist, very dense
		25-23 21-42	5	8'-10'	SILT, little fine sand, little fine sand, little
10.0'		50-63 100/.3	6	10'-10.3'	to coarse gravel, occasional cob- ble
,		17-52	7	12'-14'	
15.0'		69-69 100/.4	8	14'-14.4'	
ļ		19-24 100/.4	9	16'-17.4'	
20.0'		31-69 35-105		18'-20'	
20.01		100/0		20'	BOULDER 20' - 21.1'
25.0'		25-32			
		21-40	11	25'-27'	
30.0'			\Box		COBBLES
30.0		28-30 60-50/.1	12	30'-31.6'	Note: Drilled open hole from 9'
		1. /∪			to 35'; at 35' hole began to cave in: possibly sand
35.0'		50/0		251	and gravel layer from 33' to 38'
•	-	30/0		35'	
	+				

CON-TEC., INC.

P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO.B-17D

DATE STARTED

10/11/85 **COMPLETED** 10/17/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___2__ OF___3___

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
45 01		35-20 20-23	14	40'-42'	Gray, moist, hard SILT, little clay, trace embedded fine to medium sand, trace embedded fine gravel
45.0'		25-20 20-23	15	45'-47'	
50.01		100/.3		50'-50.3'	No sample recovered at 50.3'
55.01					TOP OF ROCK 50.3 Run - 1 52.0' - 58.6' RQD-56% Recovery 5.7' - 86% 58.6
60.0'					Run - 2 58.6' - 62.7' RQD-37% Recovery 3.2' - 78% 62.
.01					Run - 3 62.7' - 65.9' RQD-59% Recovery 2.7' - 84% 65.9
					Run - 4 65.9' - 67.5' RQD-37% Recovery 1.3' - 81% 67.5
					Run - 5 67.5' - 72.0' RQD-47% Recovery 4.7' - 104% 72.0
					BOTTOM OF BORING 72.0

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CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION LOCATION WASHINTON STREET - WOBURN, MA

HOLE NO.B-17D

DATE STARTED

10/11/85

COMPLETED 10/17/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH		D	ESCRIPTION OF MATERIAL
-1					Note:	1.	Coring time in rock averaged from 2 min. to 6 min./ft.; no water loss.
						2.	Rock type- highly weath- ered gray-green, fine to medium grained GRANODIOR- ite with quartz stringer from 50.5' to 66'
							66'-72': same rock but sound
1						3.	Installed 72' of 1½" PVC riser pipe in borehole; bottom 15' section is slotted.

CON-TEC., INC.

P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

LOCATION

W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO. 185

DATE STARTED

10/9/85

COMPLETED 10/9/85

SURF. ELEV.

GROUND WATER

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1__ OF___1___

BORING	MAD	E WITH 4	" CA	SING	
DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to 33.5'
					Installed 31.8' of 2" PVC riser pipe in borehole; bottom 10' section is slotted.
·					

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO. B-18D

DATE STARTED

LOCATION

10/1/85

COMPLETED 10/7/85

SURF. ELEV.

GROUND WATER

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____1__ OF___2_

BORING	MAI	DE WITH 4'	CA	SING; NX C	ORE
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		5	1	.5'-2.5'	ASPHALT .4
5.0'		6-6 9-16 50/.1 20-27 34-41	3	2.5'-3.1' 4'-6' 6'-8'	Light brown, dry, medium dense to very dense SILT, some embedded fine to coarse gravel, little embedded fine to medium sand
10.0'		62-36 36-25 18-41 41-41	5	8'-10'	Light brown, moist, very dense fine to medium SAND, little silt, little embedded fine to coarse gravel 8.0
15.0'		21-27 40-43	6	13'-15'	Olive-brown, moist, very dense SILT, little embedded fine to coarse gravel, cobbles, trace embedded fine to medium sand
20.0'		100/.3	7	18'-18.3'	Olive-gray, moist, very dense SILT and fine SAND, little em- bedded fine to coarse gravel, cobbles
25.0'		128	8	23'-23.5'	
30.01		106	9	28'-28.5'	
35.0'		100/.1		33'-33.1'	TOP OF ROCK 33.0' Run - 1 33.1' - 38.1' RQD-88% Recovery 4.7' - 94%
40.0'					

CON-TEC., INC. P.O. BOX 1153

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

CONCORD, N.H. 03301

603-224-0020

LOCATION

WASHINGTON STREET - WOBURN

HOLE NOB-18D

DATE STARTED

10/1/85

COMPLETED

10/7/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_2 OF_2

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Run - 2 38.1' - 43.0' RQD-82%
					Recovery 4.7' - 96% 43.0
45.0'					Run - 3 43.0' - 48.0' RQD-52%
					Recovery 4.9' - 98% 48.0
			-		Run - 4 48.0' - 53.0' RQD-78%
50.01					Recovery 4.4' - 88% 53.0
					BOTTOM OF BORING 53.0
55.0'				,	Note: 1. Coring time in rock averaged 8 to 12 min./ft.; no water loss.
					2. Rock Type- Gray, medium- grained GRANODIORITE
					3. Installed 52' of 1½" PVC riser pipe in borehole; bottom 15' section is slotted.
					SISCECU.
}					

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603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 8-198

LOCATION WASHINGTON STREET - WOBURN, MA

DATE STARTED

11/6/85

COMPLETED 11/6/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____ OF_____

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to 21.0'
					Installed 20' of 2" PVC riser pipe in borehole; bottom 10' section is slotted.
-					
		<u></u>			
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603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. B-19M

DATE STARTED 11/4/85

COMPLETED 11/6/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

LOCATION WASHINGTON STREET - WOBURN, MA

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____OF____

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESC	CRIPTION OF MATERIAL	
					Drilled wi	thout sampling to	52.0
					TOP OF WEA	THERED ROCK	47.
						to weathered rock w	ith
				-	roller bit		52.
			1		BOTTOM OF	BORING	52.
<u>-</u>						talled 44.5' of 2" er pipe in borehole	
					bot	tom 10' section is tted.	,
ı							
							
							
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CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301** 603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. B-19D

DATE STARTED 10/30/85 **COMPLETED** 11/4/85

SURF. ELEV.

GROUND WATER 11/4- 7A.M. - 8.0' Hole @ 75.0'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING	MA	DE WITH 4'	CA	SING	
DEPTH	C.	N.	SPL.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		-5	1	.5'-2'	ASPHALT .3'
		6-6 5-7	2	2'-4'	Light gray-blue, dry, medium
		6-8	-	21-41	dense SILT, some fine to medium
5.0		8-10	3	4'-6'	sand, trace embedded fine to me-
		12-12			dium gravel
		14-14	4	6 '- 8'	
		19-19	5	8'-10'	Sample wet @ 8.5'
10.0'		19-14 15-16	1 - 3 -	810.	
10.0		8-20	6	10'-12'	Light brown, wet, very dense,
i		44-49			fine to medium SAND, little fine tomedium gravel, trace
		24-28	7	12'-14'	silt 12.0'
		32-39	ļ		
15.01		26-29	8	14'-16'	Olive-brown, moist, very dense SILT, little embedded fine to
		34-37 16-24	9	16'-18'	coarse gravel, trace embedded
		32-41		10 -10	fine to medium sand
		22-37	10	18'-20'	
20.01		36-48			
		44-75/.4	11	20'-20.9'	22.0'
		 			
Ì					Gray, moist, very dense SILT,
25.01		52	12	24.5'-25.3'	<pre>some embedded fine to coarse gravel, trace embedded fine to</pre>
		75/.3			medium sand, occasional cobbles
		 _	 		
		 			
30.0		21	13	29.5'-31.5'	
		22-42			
		48			
35.0'		88	14	34.5'-36.5'	
33.01		36-41	14	34.5; -30. 5;	
		54			
40.01					

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

W.R. GRACE CO. - CRYOVAC DIVISION PROJECT

HOLE NO. B-19D

DATE STARTED 10/30/85

COMPLETED 11/4/85

SURF. ELEV.

GROUND WATER 11/4- 7A.M. - 8.4'

LOCATION

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

WASHINGTON STREET - WOPURN, MA

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___2__ OF___3__

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					EX CORE- 39.2' - 42.2'
					Recovery 1.0'
45.0'		· · · · · · · · · · · · · · · · · · ·		}	COBBLES and GLACIAL TILL 42.
		28-51 78/.2	15	45'-46.2'	Gray, wet, very dense SILT, some embedded fine to coarse gravel, cobbles, trace embedded fine to medium sand 49.
50.U!		41-103	16	50'-51'	Orange-brown, moist, very dense SILT, little embedded fine to
					medium gravel, little fine sand 54.
55.01		100/3	17	55!-55.3!	Brown, very dense, weathered rock 58.
					Hard rock-drilled with roller bit to 60.0'
60.01					Run - 1 60.0' - 62.5' RQD-0%
	-				Recovery 2.5' - 100% 62.
					Run - 2 62.5' - 63.7' RQD-0%
65.01					Recovery 1.2' - 100% 63.
70.0'					Drilled into highly fractured and weathered rock with roller bit
70.0					
					•
75.0					75.
75.0					BOTTOM OF BORING 75.

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CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 8-190

LOCATION

WASHINGTON STREET - WOBURN, MA

DATE STARTED

10/30/85

COMPLETED 11/4/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

NX COR	E				SHEET 3 OF 3
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Note: 1. Coring time in rock averaged 10 min./ft.; no water loss.
					2. Rock type- highly bro- ken and weathered gray GRANODIORITE
					3. Installed 73.8' of 1½" PVC riser pipe in bore- hole; bottom 15' sect- ion is slotted.
					
,					
<u> </u>					
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603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO. B-205

LOCATION

DATE STARTED 10/25/85 **COMPLETED** 10/25/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING	MAI	DE WITH 4	" CA	SING	
DEPTH	C.	N.	SPL. NO.		DESCRIPTION OF MATERIAL
					Drilled without sampling to 36.0:
					Installed 35' of 2" PVC riser pipe in borehole; bottom 10' section is slotted.
					,
					•

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P.O. BOX 1153 **CONCORD, N.H. 03301**

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. B-20M

DATE STARTED 10/24/85 COMPLETED 10/24/85 SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 4.5'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET______ OF_______

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without complian to 62 51
					Drilled without sampling to 63.5
					Installed 58.4' of 2" PVC
					riser pipe in borehole; bot-
	\vdash		+		tom 10' section is slotted.
			+		
		 	+		
			二		
	-		+		
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CONCORD, N.H. 03301

603-224-0020

LOCATION

WASHINGTON STREET - WOBURN, MA

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. B-20D

DATE STARTED 10/18/85

COMPLETED 10/23/85

SURF. ELEV.

GROUND WATER Depth after 48 Hours - 5.0'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		12-10 7-10	1	0-2'	ASPHALT .2
İ		11-21 25-24	2	2'-4'	Light brown, dry, medium dense, fine SAND and SILT, little em-
5.01		29-39	3	4'-6'	bedded fine to medium gravel 2.5
		55-62 32-40 50-59	4	6'-8'	Light brown, dry, medium dense SILT, little embedded fine to
10.0'		50/0		e'	coarse gravel, little embedded fine to medium sand
10.0		28 - 36 32 - 38	5	10'-12'	
		50/0		12'	
15.01		30-90	£	14'-15'	
		100/0		16'	
20.0'		100/.4	7	19:-19.4'	
					23.0
25.01		44-38 95	8	24'-25.5'	Gray, moist, very dense SILT, little embedded fine to coarse gravel, trace embedded fine to medium sand, trace clay
30.0		100	9	29'-29.5'	29.0
				23 2303	Brown-gray, wet, very dense, fine to medium SAND and SILT, little fine to coarse gravel
35.0'		100	10	34'-34.5'	36.0
					Gray, wet, very dense SILT, little embedded fine to coarse gravel, little embedded fine to medium sand
40.0		100/.3	111	39'-39.3'	medium Sand

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

LOCATION

W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET, WOBURN, MA.

HOLE NO. B-20D

DATE STARTED

10/18/85

COMPLETED

10/23/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___2___ OF___3___

BORING	M A	DE WITH 4	" C.A	ASING; NX C	CORE
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		80-1004	11	40'-409'	Gray, wet, very dense SILT, little embedded fine to coarse gravel, little embedded fine to medium sand
45.0'		100/.3		45'-45.3'	No sample recovery @ 45'
50.0'		101-100/4	13	50 '-50.9'	Orange-brown, wet, very dense, fine to medium SAND and SILT, little fine to medium gravel
55.01		125	14	55'-55.5'	•
60.0'		100/.3		60'-60.3'	No sample recovery
65-01		100		65'	TOP OF ROCK 63.5' Run - 1 65' - 71.5' RQD - 12% Recovery 6.5' - 100%
70.0'					71.5' Run - 2 71.5' - 75' RQD - 0%
					Recovery 3.5' - 100%
75.0'					75.0' Drilled with roller bit to 85'
80.0					

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

W.R. GRACE CO. - CRYOVAC DIVISION PROJECT

603-224-0020

LOCATION WASHINGTON STREET, WOBURN, MA.

HOLE NO. B-20D

DATE STARTED

10/18/85 **COMPLETED** 10/23/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___3_ OF___3__

NX COP	RE_				
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled with roller bit @ 1 min/ft.
85.0'					85.0
					BOTTOM OF BORING 85.0'
					Note: 1. No sample recovery from 39', 45' or 60'. 2. Coring time in rock 1 to 5 min/ft.; no water loss. 3. Rock type-Very weathered and broken, gray, medium-grained GRANODIORITE. 4. Installed 85' of 1½" PVC riser pipe in borehole; bottom 15' section is slotted.
}					

CON-TEC., INC.

P.O. BOX 1153

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603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. 215

DATE STARTED

10/10/85 **COMPLETED** 10/10/85 **SURF. ELEV.**

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET______ OF______

BORING MADE WITH 4" CASING SPL. SAMPLE DEPTH C. N. **DESCRIPTION OF MATERIAL** NO. DEPTH Drilled without sampling to 29.5' Installed 28.9' of 2" PVC riser pipe in borehole; bottom 10' section is slotted.

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO.B-21D

DATE STARTED

10/7/85

LOCATION WASHINGTON STREET - WOBURN, MA

COMPLETED 10/10/85

SURF. ELEV.

GROUND WATER

DEPTH AFTER 13 HOURS - 20.5'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		2-7	1	0-2'	TOPSOIL 1.0'
		20-17 12-22	2	2	
		12-22	-	2'-4'	Light brown, dry, medium dense to very dense fine to medium SAND,
5.01	-	7-23	3	4'-6'	SILT and fine to coarse GRAVEL
		41-55			
		45-50	4	6'-8'	7.0'
ļ		61-87	┝╶┤		Light brown, dry, very dense,
10.0		69-76 86	5	8'-9.5'	medium to fine SAND and fine to
10.0		22-32	6	10'-12'	coarse GRAVEL, trace silt 10.0'
ľ		46-55	Ť	10 -12	Light brown, dry, very dense,
		52-50	7	12'-14'	medium to fine SAND, little fine
		60-49			to coarse gravel, cobbles
15.0		40-51	8	14'-16'	
ŀ	-	56-83 72-57	9	161 17 01	
Ì		45-100/.4		16'-17.9'	18.0
		21-35	10	14'-20'	
20.01		27-21			Light brown, moist, very dense fine to medium SAND, some silt,
}		35-40	11	20'-22'	little embedded fine to coarse
ŀ		50-60			gravel 20.0'
ţ					Light brown, wet, very dense
25.04					fine SAND 25.0
30.01		108	12	25'-25.5'	Light brown-gray, wet, very dense fine to medium SAND, little silt, little embedded fine to coarse gravel
}					TOP_OF_ROCK28.0'
ţ				ļ	Run - 1 29.0' - 34.0' RQD-68%
35.0'				}	Recovery 4.2' - 84% 34.0'
					Run - 2 34.0' - 36.5' RQD-28%
ţ					Recovery 4.2' - 84%
40.0'					36.5

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION

WASHINGTON STREET, WOBURN, MA.

HOLE NO. B-21D

DATE STARTED

10/7/85

COMPLETED 10/10/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___2___ OF___2___

Run - 3 36.5' - 37.5' RQD-28% Recovery .7' - 70% 37. Run - 4 37.5' - 42.5' RQD-0 Recovery 4.6' - 92% 42. Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% 49. BOTTOM OF BORING 49. Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is slotted.	Recovery .7' - 70% 37. Run - 4 37.5' - 42.5' RQD-0 Recovery 4.6' - 92% 42. Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% 49. BOTTOM OF BORING 49. Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	
Run - 4 37.5' - 42.5' RQD-0 Recovery 4.6' - 92% 42. Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% 49. BOTTOM OF BORING 49. Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	Run - 4 37.5' - 42.5' RQD-0 Recovery 4.6' - 92% 42. Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% 49. BOTTOM OF BORING 49. Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	-
Recovery 4.6' - 92% Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% BOTTOM OF BORING 49. Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	Recovery 4.6' - 92% Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% BOTTOM OF BORING 49. Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	<u>-</u>
Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% BOTTOM OF BORING 49. Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	Run - 5 42.5' - 49.5' RQD-50% Recovery 6.2' - 89% BOTTOM OF BORING 49. Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	RQD-0
Recovery 6.2' - 89% BOTTOM OF BORING 49. Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	Recovery 6.2' - 89% BOTTOM OF BORING Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	42.
BOTTOM OF BORING Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	BOTTOM OF BORING Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	RQD-50%
BOTTOM OF BORING 49. Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	BOTTOM OF BORING 49. Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	40
Note: 1. Coring time in rock averaged 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	Note: 1. Coring time in rock average 10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium- grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	
10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	10-15 min/ft.; lost 50% of water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	49.
water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium- grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	water while coring from 34' to 49.5'. 2. Rock Type-Gray, medium-grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	ock averaged
to 49.5'. 2. Rock Type-Gray, medium- grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	to 49.5'. 2. Rock Type-Gray, medium- grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	lost 50% of
2. Rock Type-Gray, medium- grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	2. Rock Type-Gray, medium- grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	.ng IIom 54
grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	grained GRANODIORITE. 3. Installed 5' of 1½" PVC riser pipe in borehole; bottom 15' section is	
3. Installed 5' of l½" PVC riser pipe in borehole; bottom 15' section is	3. Installed 5' of l½" PVC riser pipe in borehole; bottom 15' section is	
riser pipe in borehole; bottom 15' section is	riser pipe in borehole; bottom 15' section is	ORITE.
riser pipe in borehole; bottom 15' section is	riser pipe in borehole; bottom 15' section is	l为" PVC
		orehole;
slotted.	slotted.	ion is
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CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 22S

LOCATION WASHINGTON STREET - WOBURN, MA

SURF. ELEV.

GROUND WATER

DATE STARTED 9/4/85 COMPLETED 9/6/85

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		1-9 11-14	1	0-2'	TOPSOIL .
5.0'		11-14 12-15 12-14 11-31	2	2'-4' 4'-6'	Light brown-gray, moist, medium dense, fine SAND, trace fine to medium gravel, trace silt 2.
		42-91 84-89 100/.2	4	6'-7.2'	Light brown, moist, medium dense, fine to medium SAND, little fine to coarse gravel 4.
10.0'		73-75/.4	5	8'-8.9' 10'-10.9'	Light brown, dry, very dense, me-
15.0'		21-63 100/.4 26		12'-13.4'	COBBLES and coarse to fine GRAVEL 15.
		32-37 51-34 32-37		17.5'-19.5'	Light brown, wet, very dense,
20.01		46 11-22 27-27	9	20'-22'	23.
25.0'		16-43 47-65	10	25'-27'	Olive-brown, wet, very dense, SILT, little embedded fine to coarse gravel, little embedded fine to medium sand
30.0'		21-50	11	30'-32'	TOP OF ROCK 32.
		80-83			Drilled with roller bit to 33.
35.0!					BOTTOM OF BORING 33. Note: Installed 34.8'of 2" PVC riser pipe in borehole; bottom 15' section is slotted.

CON-TEC., INC. P.O. BOX 1153 **CONCORD. N.H. 03301**

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

603-224-0020

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. B-22D

DATE STARTED

9/9/85 **COMPLETED** 9/12/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to bedroc
					TOP OF ROCK 32
30.0'					Run - 1 32.8' - 36.7' RQD-0
					Recovery 3.2' - 82% 36
25 01					Run - 2 36.7' - 41.3' RQD-26%
35.0'					Recovery 4.0' - 87% 41
·		-			Run - 3 41.3' - 46.1' RQD-0
40.0'				ı	Recovery 2.6' - 54% 46
			廿		Run - 4 46.1' - 52.8' RQD-45%
					Recovery 4.6' - 67% 52
45.0'					BOTTOM OF BORING 52
50.0'					Note: 1. Coring time in rock averaged 8 to 10 min/ft; no water loss.
55.0'					 Rock type- Gray, bro- ken, medium grained GRANODIORITE
					3. Installed 52.7' of l½" PVC riser pipe in borehole; bottom 15' section is slotted.

CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301**

PROJECT W.R. GRACE - CRYOVAC DIVISION

603-224-0020

LOCATION WASHINTON STREET - WOBURN, MA

HOLE NO.B-23S

DATE STARTED 10/10/85

COMPLETED 10/15/85

SURF. ELEV.

GROUND WATER Depth After 72 Hours - 20'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____1__ OF___1___

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		75/0		.5'	ASPHALT .3
		56-75/.1	1	2'-2.6'	Dark brown, dry, very dense coarse to fine GRAVEL, COBBLES, and fine
5.0'		28-45 57-75/.1	2	4'-5.6'	to coarse SAND
		67 - 90	3	6'-7.1'	7.5
10.0'		32-75/.4	4	8'-8.9'	Light brown-gray, wet, very dense fine SAND and SILT, little embed-
10.0		24-25 40-43	5	10'-12'	ded fine to coarse gravel, cobb-
		750		12'	13.0
15.01		56 - 47 43 - 59	6	14'-16'	Light gray, moist, very dense fine to medium SAND, little em-
		45-59			<pre>bedded fine to coarse gravel, trace silt</pre>
20.0'		28-32	7	19'-21'	
		33-29		1, 01	
					TOP OF ROCK 24.
25.0'		15/.4-50/0		24'-24.4'	Drilled with roller bit to 26.0
					BOTTOM OF BORING 26.
30.01					Note: 1. No sample recovery from 24' to 24.4'.
					2. Installed 26' of 2" PVC
35.0'					riser pipe in borehole; bottom 10' section is slotted.
					5100000
40.0'					

CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301**

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. B-23D

DATE STARTED

LOCATION WASHINGTON STREET, WOBURN, MA. 10/15/85

COMPLETED 10/18/85

SURF. ELEV.

GROUND WATER

DEPTH ON COMPLETION - 18.0'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_1 OF_1

BORING	MAI	DE WITH 4	SPL.	SING; NX (DESCRIPTION OF MATERIAL
DEPIR	U .	IN.	NO.	DEPTH	DESCRIPTION OF MATERIAL
					Drilled without sampling to refusal @ 24.0'
25.0'					Run - 1 25.0' - 28.0' RQD = 0
					Recovery 1.0' - 33%
					Cored Boulder from 25'-26'
					TOP OF ROCK 27.0'
30.01		<u> </u>			Run - 2 30.0' - 38.0' RQD = 65%
 		.	1		Recovery 7.5' - 94%
					38.0'
40.0'					Run - 3 38.0' - 47.5' RQD = 81%
1					Recovery 9.7' - 102%
					47.5'
50.01					BOTTOM OF BORING 47.5'
					Note: 1. Coring time in rock averaged 6 to 10 min/ft; lost all
					water while drilling at 27.5; never regained.
					 Rock type-Gray and pink, medium-grained GRANODIORITE.
		· · · · · · · · · · · · · · · · · · ·			3. Installed 47.5' of 12" PVC
}			+-+		riser pipe in borehole;
					bottom 15' section is slotted.
			 		stocced.
			+-+		
	\dashv		╁		
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CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301** 603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION WASHINGTON STREET, WOBURN, MA.

HOLE NO. B-24S

DATE STARTED

10/1/85

COMPLETED 10/2/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		5-8	1	0-2'	Light brown, dry, medium dense,
	-	12-8	2	2'-4'	fine SAND, SILT, and fine GRA-
	<u> </u>	41-25 20-60	 	24.	VEL 2.0'
5.0'		52-77	3	4'-5.2'	Light brown, dry, very dense fine
		100/.2	ļ	<i>-</i> .	to medium SAND, and coarse to
		75/0	 	6 '	fine GRAVEL, COBBLES, little silt 7.0'
ļ		75/0		8'	Light brown, moist, very dense
10.0'					fine to medium SAND, little em-
		43-48	4	10'-12'	bedded fine to coarse gravel,
		44-34	-		little silt
					14.0
15.0					Light brown and gray, moist, very
		66-67 95	5	15'-16.5'	dense fine SAND and SILT, little
				ŀ	embedded fine to coarse gravel
Į.					
20.01		23-33	6	20'-22'	
Ì		23-33 44-61	-	2022.	
Ī					
			\vdash		
25.0'		65-110	7	25'-26'	26.0
ţ				-5 -5	Drilled with roller bit to 27.0'
}			\vdash	ŀ	
30.0					BOTTOM OF PORING 27.0'
					Note: 1. Hole too crooked to core.
Ţ					
ŀ	-		\vdash		2. Installed 28.5' of 2"
ŀ					PVC riser pipe in bore- hole; bottom 10' section
				1	is slotted •
}		<u> </u>	 	}	
}			┝╌┤		

CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301**

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION

WASHINGTON STREET, WOBURN, MA.

HOLE NO. B-24D

DATE STARTED 10/2/85

COMPLETED 10/7/85

SURF. ELEV.

603-224-0020

GROUND WATER DEPTH AFTER 72 HOURS - 12.5'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO, OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH	DESC	RIPTION OF MATERIAL	-
						ithout sampling ced rock at 23.	
					TOP OF ROO	CK @	23.0
25.0'					Run - 1	27.5' - 31.5'	RQD=0%
			11		Recovery	2.7' - 68%	31.5
					Run - 2	31.5' - 41.5'	
30.0'	-		+-		Recovery	10.0' - 100%	41.5
					Run - 3	41.5' - 47.5'	
25 21					Recovery	5.4' - 90%	47.5
35.01			11	·	BOTTOM OF	BORING	47.5
40-0'					Note: 1.	Coring time in averaged 8 to min./ft.; no w loss.	12
45.0'					2.	Rock Type- Gra ium grained GR ITE with ocass quartz stringe	ANODIOR- ional
50.01					3.	Installed 49' PVC riser pipe borehole; bott section is slo	in om 15'
			+-				
Ţ							

CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301**

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO.

B-25S

LOCATION

WASHINGTON STREET, WOBURN, MA.

DATE STARTED

10/2/85

COMPLETED

10/4/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_1__OF__1__

BORIN	G M	ADE WITH	HOLL	OW STEM AL	GER CASING
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		11	1	.5'-2'	ASPHALT .4'
		13-8 4-2	2	21-41	Brown, dry, medium-dense to loose, fine
5.0'		5-7 4-4	3	4'-6'	SAND and SILT, trace fine to medium gravel
		2-2			6.0'
		11-13 5-5	4	6'-8'	Light gray, moist, medium-dense, fine
		5-11	5	8'-10'	SAND and SILT, some embedded fine to medium gravel 8.0'
10.01		17-21 20-21	6	10'-12'	Olive-brown, moist, dense to very dense
		21-24			SILT, little embedded fine to coarse
. }		17-38 42-48	7	12'-14'	<pre>gravel, trace embedded fine to medium sand</pre>
15.0		20-18	8	14'-16'	16.0'
ŀ		18-21 28-34	9	16'-18'	
Į		44-58	10	18'-20'	Olive-brown, wet, very dense SILT, little embedded fine to coarse gravel,
20.0		13-28 39-51	10	1820.	little embedded fine to medium sand
		10-39 40-55	11	20'-22'	
		40-23			24.0'
25.0					Brown-gray, moist, hard SILT, trace
		18-18	12	25'-27'	clay (finely layered) 26.0'
}		20-40			Brown-gray, moist, very dense SILT,
					little embedded fine to medium gravel, trace embedded fine sand
30.0		75/.4	13	30'~30.4	I
					BOTTOM OF BORING 31.0'
Ł				i	Note; Installed 30.5' of 2" PVC
35.0					riser pipe in borehole; bottom 10' section is slotted.
· <u> </u>				ļ	bottom to section is stotted.
-					

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301 603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. B-25D

LOCATION

WASHINGTON STREET, WOBURN, MA.

COMPLETED 10/11/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

DATE STARTED 10/4/85

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

BORING MADE WITH 4" CASING; NX CORE SPL. SAMPLE C. DEPTH N. **DESCRIPTION OF MATERIAL** DEPTH NO. Drilled without sampling to rock at 27.0' 27.0' TOP OF ROCK @ 30.0' Run - 1 27.5' - 34.4' ROD=61% Recovery 6.8' - 99% 34.41 34.4' - 44.4' Run - 2 ROD=74% 35.0 Recovery 9.71 - 97% 44.4' Run - 3 44.4' - 48.0' RQD=87% Recovery 3.8' - 106% 40.01 48.0' BOTTOM OF BORING 48.0' 45.0 Note: 1. Coring time in rock averaged 3-5 min./ft.; no water loss. 2. Rock type- Pink and 50.0 gray, medium to coarse grained GRANITE PEGMA-TITE 3. Installed 47.5' of 13" PVC riser pipe in borehole; bottom 15' section is slotted.

CON-TEC., INC.

P.O. BOX 1153

CONCORD, N.H. 03301 603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. B-268

DATE STARTED

9/19/85

LOCATION WASHINGTON STREET, WOBURN, MA.

COMPLETED 9/19/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING	MA:	DE WITH H	OLLO	OW STEM AUC	GER CASING
DEPTH	C.	N.	SPL. NO.		DESCRIPTION OF MATERIAL
					Drilled without sampling to refus- al at 22.6'
					TOP OF ROCK 22.6
					BOTTOM OF BORING 22.6'
					Note: Installed 23.9' of 2" PVC riser pipe in bore- hole; bottom 10' sect- ion is slotted.
· .					•

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. B-26D

DATE STARTED

9/12/85 **COMPLETED** 9/18/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1___ OF___2___

13-12 3 8'-10' 18-23 23-28 4 10'-12' 21-18 10-17 5 12'-14' 23-28 16'-18' 33-30 21-28 8 18'-20' 20'-22' 15-11 20'-22' 15-11 20'-22' 15-11 20'-22' 1	BORING	MA	DE WITH 4	" CA	SING; NX C	CORE
11-11	DEPTH	C.	N.			DESCRIPTION OF MATERIAL
11-11				1	0-2'	Light brown, dry, medium dense,
75 75/0 6'- 8'-10' 13-12 3 8'-10' 18-23 23-28 4 10'-12' 21-18 10-17 5 12'-14' 23-28 15.0' 7-11 6 14'-16' 16-18 15-26 7 16'-18' 33-30 21-28 8 18'-20' 20.0' 30-42 14-16 9 25.0' 7.9 TOP OF ROCK 23.0 Run - 1 22.3' - 25.3' RQD=0% Recovery 2.0' - 100% 25.3' Recovery 4.4' - 88% 30.3' Run - 2 25.3' - 30.0' RQD=36% Recovery 4.4' - 88% 30.3' Run - 3 30.3' - 36.0' RQD=44% Recovery 5.1' - 89% 36.0' Run - 4 36.0' - 42.3' RQD=73%					2'-	medium to fine SAND, some coarse
75/0 6'- 13-12 3 8'-10' 18-23	5.0'			2	4'-5.5'	
13-12 3 3 10 18-23 10 18-23 10 12 12 12 12 12 12 12				ļ	6'-	7.5'
23-28 4 10'-12'	10.01			3	8'-10'	
10-17 5 12'-14' 23-28 14'-16' 16-18 16-18 16'-18' 33-30 21-28 8 18'-20' 20.0' 30-42 20'-22' TOP OF ROCK 23.0 Run - 1 22.3' - 25.3' RQD=0% Recovery 2.0' - 100% 25.3' Run - 2 25.3' - 30.0' RQD=36% Recovery 4.4' - 88% 30.3' Run - 3 30.3' - 36.0' RQD=44% Recovery 5.1' - 89% 36.0' Run - 4 36.0' - 42.3' RQD=736%	10.0		23-28	4	10'-12'	
15.0' 7-11 6 14'-16' 16-18	,		10-17	5	12'-14'	
15-26	15.0'		7-11	6	14'-16'	
20.0' 30-42 14-16 9 20'-22' TOP OF ROCK 23.0 Run - 1 22.3' - 25.3' RQD=0% Recovery 2.0' - 100% 25.3 RQD=36% Recovery 4.4' - 88% 30.3 Recovery 4.4' - 88% 30.3 Recovery 5.1' - 89% 36.0 RQD=44% Recovery 5.1' - 89% 36.0 RQD=73% Run - 4 36.0' - 42.3' RQD=73% Run			15-26 33-30			
14-16 9 20'-22' TOP OF ROCK 23.0	20.0'			8	18'-20'	
Run - 1 22.3' - 25.3' RQD=0% Recovery 2.0' - 100% 25.3 Run - 2 25.3' - 30.0' RQD=36% Recovery 4.4' - 88% 30.3 Run - 3 30.3' - 36.0' RQD=44% Recovery 5.1' - 89% 36.0 Run - 4 36.0' - 42.3' RQD=73%			14-16	g	20'-22'	TOP OF ROCK 23.0'
Recovery 2.0' - 100% 25.3 Run - 2 25.3' - 30.0' RQD=36% 30.3 Recovery 4.4' - 88% 30.3 Run - 3 30.3' - 36.0' RQD=44% 36.0' RQD=44% 36.0' - 42.3' RQD=73% 36.0					•	
Recovery 4.4' - 88% 30.3 Run - 3 30.3' - 36.0' RQD=449 Recovery 5.1' - 89% 36.0 Run - 4 36.0' - 42.3' RQD=739	25.01					Recovery 2.0' - 100% 25.3'
Run - 3 30.3' - 36.0' RQD=449 Recovery 5.1' - 89% 36.0 Run - 4 36.0' - 42.3' RQD=739						Run - 2 25.3' - 30.0' RQD=36%
Run - 3 30.3' - 36.0' RQD=449 Recovery 5.1' - 89% 36.0' Run - 4 36.0' - 42.3' RQD=739						Recovery 4.4' - 88% 30.3'
Run - 4 36.0' - 42.3' RQD=739	30.01					Run - 3 30.3' - 36.0' RQD=44%
						Recovery 5.1' - 89% . 36.0'
Recovery 4.6' - 73%	25 01				, 	Run - 4 36.0' - 42.3' RQD=73%
	15.01					Recovery 4.6' - 73%
40.0	40.01					·

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 26D

LOCATION WASHINGTON STREET - WOBURN, MA

DATE STARTED

9/12/85 **COMPLETED** 9/18/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____2 OF___2

DEPTH	c.	N.	SPL. NO.	SAMPLE DEPTH		DES	CRIPTION OF MATERIAL
45 01					BOTTOM	OF	BORING 42.3
45.0							Coring time in rock av-
			·				eraged 8 to 10 min./ft.; no water loss.
						2.	Rock type- Gray, medium-grained, GRANODIORITE.
		· · · · · · · · · · · · · · · · · · ·				3.	Installed 40.4' of 1½" PVC riser pipe in bore- hole; bottom 15' sect-
							ion is slotted.
ı							·
,							

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE - CRYOVAC DIVISION

LOCATION WASHINGTON STREET - WOUBRN, MA

HOLE NO. 275

DATE STARTED 9/30/85 **COMPLETED** 9/30/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL	
					Drilled without sampling to	22.0
					Installed 23' of 2" PVC riser pipe in borehole; bottom 10' seciton is slotted.	
	-		+		·	

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

603-224-0020

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. B-27D

DATE STARTED 9/19/85 **COMPLETED** 9/21/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1_ OF__2___

BORING MADE WITH A" CASING NY CORE

DEPTH	C.	N.	SPL.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
5.0'		1-3 7-8 75/.1	1	0-2'	Light brown, dry, medium dense to very dense, fine to medium SAND, SILT, and coarse to fine GRAVEL, COBBLES
10.0'		17-21 25-29 31-42 26-28 12-13 14-49 26-31	:3	5'-7' 7'-9' 9'-11' 11'-13'	Green-gray, moist, very dense SILT, little embedded fine to coarse gavel, cobbles, trace embedded fine to medium sand
15.0'		30-28 37-36 42-68	б 7	13'-15'	
20.01		37-56 40 51-23 73-100/-2	8	18.5'-20.5' 20.5'-20.7'	TOP OR ROCK 20.7' Run - 1 21.3' - 26.3' RQD=80%
25.0'					Recovery 4.7' - 94% 26.3' Run - 2 26.3' - 29.0' RQD=74% Recovery 2.5' - 93% 29.0'
30.0'					Run - 3 29.0' - 34.5' RQD=73% Recovery 4.6' - 84% Run - 4 34.5' - 40.5' RQD=100%
35-0'					Recovery 6.0' - 100%
40.0					

CON-TEC., INC. P.O. BOX 1153 **CONCORD, N.H. 03301**

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. B-27D

DATE STARTED 9/19/85

COMPLETED 9/21/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

LOCATION WASHINGTON STREET - WOBURN, MA

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH		DESC	CRIPTION OF MATERIAL	
								40.5
					BOTTOM	OF	BORING	40.5
45.0'					Note:	1.	Coring time in ro eraged 8 to 12 mi no water loss.	
						2.	Rock type- Gray, grained GRANODIOR	medium- ITE
						3.	Installed 43' of riser pipe in bor bottom 15' sectio slotted.	l½" PVC ehole; n is
<u> </u>								

CON-TEC., INC. P.O. BOX 1153

CONCORD. N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION

WASHINGTON STREET, WOBURN, MA.

HOLE NO. B-28S

DATE STARTED

9/25/85

COMPLETED

10/1/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET___1___ OF___1___

BORING	MADE	E WITH 4	" CA	SING	
DEPTH	C.	N.	SPL. NO.		DESCRIPTION OF MATERIAL
					Drilled without sampling to refusal @ 25.4'
					Installed 27.7' of 2" PVC riser pipe in borehole; bottom 10' section is slotted.
					Note: First attempt to drill hole could not get casing beyond boulder from 6' to 8' - Roller bit boulder 6'-7' Cored boulder 7'-8'
					Bottom of hole 8.0'
					•
·					

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO.B - 28D

LOCATION DATE STARTED

9/23/85

COMPLETED 9/25/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____1___ OF____2___

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		6-7	1	0-2'	ASPHALT .2'
-		9-7 3-2	2	2'-4'	Light brown, dry, medium dense
		2 - 15	3	4'-6'	to loose, fine SAND, little silt,
5.01		17-23 28-24	3	1 -0	trace fine gravel 3.5'
		33-40 27-57	4	6'-8'	Light brown, dry, dense to very dense, fine to medium SAND, some
t		55-66	5	8'-10'	fine to coarse gravel, cobbles,
10.01		34-37 21-19	6	10'-11.8'	trace silt
E		44-88/.3		10 -11.6	12.0'
		36-78/.3	7	12'-12.8'	Brown-gray, moist, very dense,
15.01		15-23	8	14'-16'	SILT and fine to medium SAND, little embedded fine to coarse
		21-21 18-23	9	16'-18'	gravel, cobbles
		61-16		[
20.0		13-23 33-25	10	18'-20'	
20.0	\Box	19-21	11	20'-22'	TOP OF ROCK @ 25.0'
-		30-28			Run - 1 25.0' - 29.5' RQD-57%
F					Recovery 3.6' - 80% 29.5'
25.01					Run - 2 29.5' - 30.5' RQD-75%
-				}	Pogovory 1 51 - 1509
				 	30.5
30.01					Run - 3 30.5' - 35.5' RQD-37%
				_	Recovery 5.0' - 100% 35.5'
}-					Run - 4 35.5' - 39.5' RQD-18%
35.01					Recovery 3.5' - 87%
	-+	<u> </u>		-	Run - 5 39.5' - 41.7' RQD-76%
	\rightrightarrows				Recovery 2.3' - 105%
L				1	•

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. B-28D

DATE STARTED 9/23/85

COMPLETED 9/25/85

SURF. ELEV.

GROUND WATER

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Run - 6 41.7' - 44.5' RQD-48% Recovery 2.5' - 89% 44.
45.01					BOTTOM OF BORING 44.
					Note: 1. Coring time in rock averaged 8 to 12 min./ft.; some water loss.
					 Rock type- Gray, slight- ly to very broken, coars to fine grained GRANODI- ORITE with occasional quartz stringers.
					3. Installed 45.4' of $1\frac{1}{2}$ " PVC riser pipe in bore- hole; bottom 15' sect- ion is slotted.

W. R. GRACE CO. - CRYOVAC DIVISION WASHINGTON STREET, WOBURN, MA.

WELL CONSTRUCTION DETAILS

WELL#	PVC	FILTER	GROUT	PVC
	SCREEN	SAND	SEAL	STICKUP
138	17'-27'	14'-27.5'	0-14'	2.5'
13D	37'-52'	29'-52.2'	0-29'	3.51
145	11.8'-21.8'	9'-22'	0-9:	3.3'
14D	27.7'-42.7'	24'-42.7'	0-24'	2.7'
15S	13.8'-23.8'	10'-24.5'	0-10'	 3'
15D	31.5'-46.5'	26'-46.5'	0-26'	3'
16S	20.1'-30.1'	15'-30.5'	0-15'	31
16D	44.3'-59.3'	40'-60'	0-40'	3'
17S	37.2'-47.2'	30'-49.4'	0-30'	3'
17D	57 '- 72 '	50 '- 72'	0-50'	3'
185	21.8'-31.8'	18'-33.2'	0-18'	3'
18D	37'-52'	35'-53'	0-35'	3'
198	10'-20'	6'-21'	0-6	3'
19M	34.5'-44.5'	30'-52'	0-30'	3'
19D	58.8'-73.8'	56'-75'	0-56'	3'
20S	25'-35'	20'-35'	0-20'	3'
20M	48.4'-58.4'	44'-63.5'	0-44'	3'
20D	70'-85'	64'-85'	0-64'	3'
218	18.9'-28.9'	15'-29'	0-15'	1.51
210	33'-48'	30'-49.5'	0-30 *	2.0
22S	17.4'-32.4'	14'-33'	0-14'	2.4'
22D	36.9'-51.9'	34.5'-52.8'	0-34.5	.8'
238	16'-26'	12'-26'	0-12'	3'
23D	32.5'-47.5'	29'-47.5'	0-29'	3'
245	16'-26'	11'-26'	0-11'	2.5'
24D	32'-47'	28'-47.5'	0-28'	2.0'
25 <i>S</i>	20.1'-30.1'	15'-30.4'	0-15'	3'
25D	32.5'-47.5'	28'-48'	0-28	3'
265	11'-21'	6'-22.6'	0-6'	2.9'
26D	25'-40'	23'-42.3'	0-23'	.51
27S	11.2'-21.2'	8.5'-22'	0-8.5'	1.8'
27D	25.5'-40.5'	23'-40.5'	0-23'	2.5'
28S	14.6'-24.6'	12'-25.4'	0-12'	3.4'
28D	29.5'-44.5'	27'-44.5'	0-27'	91

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

P.O. BOX 1153 CONCORD, N.H. 03301

603-224-0020

LOCATION WASHINGTON STREET - WOBURN, MA

HOLE NO. 295

DATE STARTED 1/9/86

COMPLETED 1/10/86

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 2.4

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET____OF___1

BORING	MAD	E WITH 4"	CA	SING		
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL	
		81	1	.5'-1'	ASPHALT	.3'
5.0'		14-19 24-75/.4 18-26 33-39	3	2'-3.9' 4'-6'	Light brown, very dense, fine to coarse SAND, some fine to medium gravel	.9'
10.0'		29-33 36-40 26-34 75/.4	5	6'-8' 8'-9.4'	Olive-brown, moist, very dense SILT, some fine sand, little embedded fine to coarse gravel	8.0'
		75/.4 58-75/.3	<u> </u>	10'-10.4'	Olive-gray, moist, very dense SILT, little embedded fine to coarse gravel, little embedded fine sand	
20.0'		58-91 68-118 61-84	9	14'-15' 16'-17' 18'-19'	Light brown, wet, very dense, fine to medium SAND and coarse to fine GRAVEL, COBBLES, trace silt	12.2'
20.0		54-75/.3	111	20'-20.8'	Hole caving from 12'-15.5'.	15.5'
25.0'		49-82	12	25'-26'	Olive-gray, wet, very dense, fine to medium SAND, some embedd fine to coarse gravel, little to trace silt	ed 26.0'
30.0'					BOTTOM OF BORING Note: Installed 24.3' of 2"	26.01
					PVC riser pipe in bore- hole; bottom 15' section is slotted.	

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 30S

DATE STARTED

LOCATION WASHINGTON STREET - WOBURN, MA

1/23/86 . **COMPLETED** 1/23/86

SURF. ELEV.

GROUND WATER DRY ON COMPLETION

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB, WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL	
					TOPSOIL	.3'
5.01		17-75/.4	1	2'-2.9'	Olive-brown, dry, very dense SILT and coarse to fine GRAVEL, COBBLES, trace embedded fine to medium sand	3.0'
					GAS LINE	3.4'
10.0'					BOTTOM OF BORING	3.4'
• •					Note: Made three attempts to drill B-30S	
					#1 - Refusal @ 4.2'	
					#2 - Refusal @ 4.0' #3 - Abandoned hole due to gas line in area	
						·

CON-TEC., INC. P.O. BOX 1153 CONCORD, N.H. 03301 603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

LOCATION

WASHINGTON STREET - WOBURN, MA

HOLE NO. 325

DATE STARTED

1/21/86

COMPLETED 1/21/86

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 6.5

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C.NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET_1_OF_1

BORING	MA	DE WITH 4	" CA	SING		
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL	
					COBBLES and fine to coarse GRAVEL	
5.01		26-49 55-53	1	3'-5'	Light brown, dry, coarse to fine GRAVEL, COBBLES, and	
		55-75/.2	2	5'-5.7'	medium to fine SAND	7.0'
		10-10 11-17	3	7'-9'	Olive-brown, wet, medium dense	
10.0		17-21 25-23	:4	9'-11'	to very dense SILT, some fine sand, little embedded fine to	
		15-16	5	11'-13'	coarse gravel	
		17-25 9-13	6	13'-15'	Olive-brown, wet, very dense	13.0'
15.01		15-30 33-75/.3	7	15'-15.8'	SILT, little fine to medium sand	1,
		24-18	8	17'-19'	little embedded fine to coarse gravel, cobbles	
		18-31				
20.0'		30-39 48-21	9	19'-21'		
25.0					TOP OF ROCK	25.01
					Drilled with Roller Bit	26.0'
					BOTTOM OF BORING	26.01
30.01				`		
					Note: Installed 27' of 2" PVC riser pipe in borehole;	
					bottom 10' section is slotted.	
					•	

CON-TEC., INC. P.O. BOX 1153

CONCORD, N.H. 03301

603-224-0020

PROJECT

W.R. GRACE CO. - CRYOVAC DIVISION

HOLE NO. 31D

LOCATION WASHINGTON STREET - WOBURN, MA

DATE STARTED

1/13/86 . COMPLETED 1/17/86

SURF. ELEV.

GROUND WATER

DEPTH ON COMPLETION - 6.2'

JOB NO. 8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C-NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING	MA	DE WITH 4	" +	3" CASING	
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		6-6	1	0-2'	TOPSOIL .3'
		12-24 75/.2		2'-2.2'	Light brown, moist, dense to very
5.01		16-17	2	4'-6'	dense, fine SAND and SILT, little embedded fine to coarse gravel,
		24-28 75/.3		6'-6.3'	occasional cobbles
		32-34 24-27	3 4	7'-8' 8'-10'	8.0'
10.01		34-44 32-51	5	10'-11.3'	Light brown, wet, very dense, fine to medium SAND, little embedded
		75/.3		12'-14'	fine to coarse gravel, trace silt 10.0'
		21-42 44-57	6		Olive-gray, moist, very dense SILT, some fine sand, little embedded
15.01		29-39 46-75/.3	7	14'-15.8'	fine to coarse gravel
		50/0		16'-	COBBLES- 16'-18'
20.01		30-31 52-75/.1	8	18'-19.6'	
		96	9	20'-20.5'	
					BOULDER - 23.7'-25.7'
25.0'					Run - 1 24.2' - 27.8'
					Recovery 1.8' - 50%
					BOULDERS TOP OF ROCK @ 27.8'
30.01					TOP OF ROCK @ 27.8' Run - 2 27.8' - 33.0' RQD-92%
					Recovery 5.2' - 100% 33.0'
35.0'					Run - 3 33.0' - 43.0' RQD-99%
					Recovery 9.9' - 99%
		 		1	

MOJECT

W.R. GRACE CO. - CRYOVAC DIVISION

WASHINGTON STREET - WOBURN, MA

HOLE NO.

CONCORD, N.H. 03301 603-224-0020

LOCATION

31D

CON-TEC., INC.

P.O. BOX 1153

DATE STARTED 1/13/86

COMPLETED

SURF. ELEV.

GROUND WATER DEPTH ON COMPLETION - 6.2'

JOB NO.

8563

N-NO OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C.NO. OF BLOWS TO DRIVE

CASING 12" W/300 LB. WEIGHT FALLING 24"

NX Cor	e				SHEET 2 OF 2
DEPTH	C.	N.	SPL. NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
			+=		42.0
45.0'					Run - 4 43.0' - 48.0' RQD-82%
42.0					Recovery 5.0' - 100%
			##		48.0
50.0'					BOTTOM OF BORING 48.0
					
					Note: 1. Coring time in rock averaged 3 to 5 min./ft.;
		-			no water lost.
					2. Rock Type- Gray and
					pink GRANODIORITE
	-		+		3. Installed 50.5' of
					la PVC riser pipe in borehole; bottom 15'
			丰		section is slotted.
		· · · · · · · · · · · · · · · · · · ·	+		
					·
			17		
	 		+		

WN BY: LGR	REF	PROJECT NO:	ONITORING WELL	
		Depth	of borehole	44.5 ft.
		Depth	to bottom of well	42.8 ft.
		I.D. of	screened section	2"
		Type o	screened section lotted schedule 40 PVC	
		Depth	to top of screen	32.8 ft.
		·	o top of sand pack	29.9 ft.
		Type o	f seat Bentonite Pelle	28 ft.
			In situ sedi	ment to 28 ft.
		Type o	f backfill Cement grout	<u>to</u> 5 ft.
		Diamet	er of borehole	
		I.D. of	riser pipe2" f riser pipeSchedule 4	O Flush joint PVC
		Steel	with locking cap	·
		Type of	surface casing3" I surface casing	
阿西河南南西南		Ground	Elevation	45.0 ft.
		Elevation	on of top of riser pipe	47.17 ft.

	DATE 8/		Plate	
о DEРТН, п.	SAMPLES SAMPLINGE RESISTANCE	DESCRIPTION	ELEVATION	Soil,
	2	Brown to tan fine Sand, trace of gravel, trace of of organics (FILL)		1
5 .	2			200
	3(2)	- becoming black	35.0	300
10	30 (3)	Brown fine Sand, trace of mica	33.0	12
15	16			3
ر ۱	12	- becoming gray with trace of medium Sand and trace of silt .		< 1
20	19			8
25	26			90
30	40	- red-brown fine sand seams		65
35	27	Grey gravelly coarse to medium Sand, trace of mica	9.0	3
40	30	(1) 3½-inch O.D. split spoon sampler driven with 300-lb. hammer. (2) Offset approximately 4 feet east of original borehole due to obstruction.	. 5	-
45		(3) Second offset approximately 20 feet east of original borehole.		

	Elevation of top of riser pipe	47.64 ft.
33.	Ground Elevation	45.1 ft.
	I.D. of surface casing 3" Type of surface casing Steel with locking cap I.D. of riser pipe 2" Type of riser pipe Schedule 40 F1 Diameter of borehole 4"	ush joint PVC
1978/97/97	Type of backfill Cement grout to 5 In situ sediment	ft. to 19 ft.
	Type of seal Bentonite Pellets Depth to top of seal	19 ft. 21 ft.
	Depth to top of sand pack Depth to top of screen Type of screened section	25 ft.
	i.D. of screened section 2"	·
	Depth to bottom of well	35 ft.
	Depth of borehole	37 ft.
	REPORT OF MONITORING WELL ST	W - 1
DRAWN BY LGR ICHECKED B	PROJECT NO: 82C2467 DATE: 9/2	26/83 FIGURE NO
	WOODWARD-CLYD	

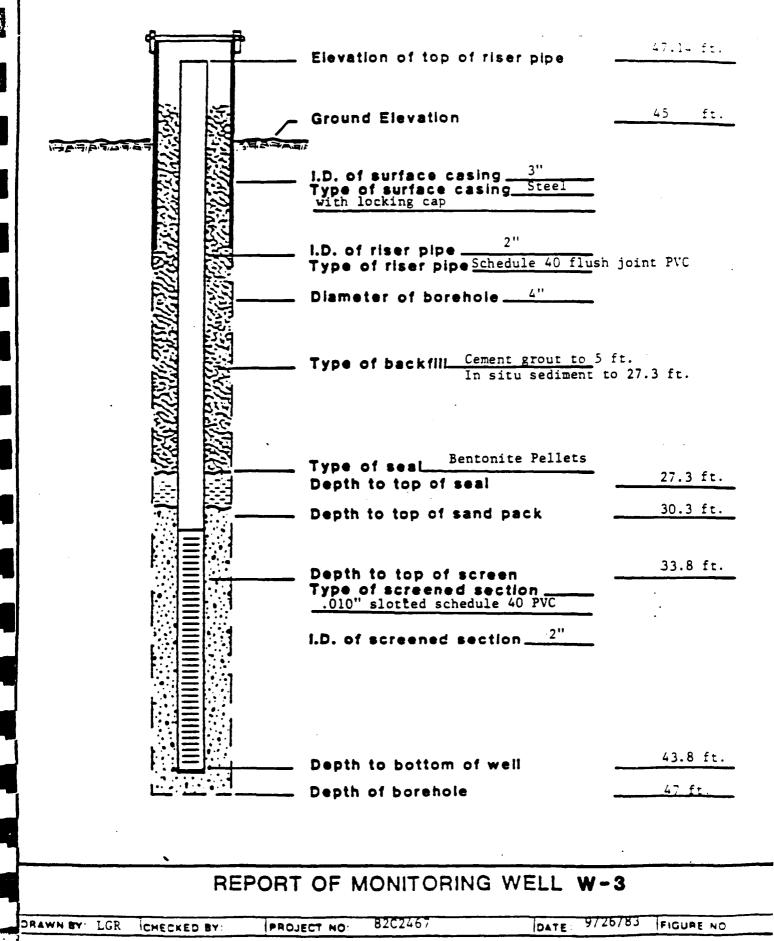
	LOG of BORING No.SW-1						
DA	TE8/3	31/83 SURFACE ELEVATION 45.1 LOCATION Sec	e Plate				
O DEPTH, II.	SAMPLINGÉ RESISTANCE	DESCRIPTION	ELEVATION	Soll Soll (ppm)			
5	į	(See log of W-1 for 0-25 feet)					
10 _							
15 -							
25		Tan to orange fine Sand with silt seams	20.1	2.5			
30		- trace of oxides	11.6	7			
35		Tan coarse to fine Sand, trace of gravel	8.1	4			
-		(1) 3½-inch O.D. split spoon sampler driven with 300-1b hammer.					
	pletion Dep	The second secon	82 C 24				

I.D. of surface casing 3" Type of surface casing Steel with locking cas I.D. of riser pipe 2" Type of riser pipe Schedule 40 Flushjoint PVC Diameter of borehole 4" Type of backfill Cement grout to 5 ft. In situ sediment to 29.8 ft. Type of seel Bentonite Pellets Depth to top of seal 29.8 ft. Depth to top of sand pack 31.8 ft. Depth to top of screen 34.5 ft. Type of screened section 2" I.D. of screened section 2" Depth to bottom of well 44.5 ft. Depth of borehole 47 ft.			Elevation of top of riser pipe	<u>46.8 ft.</u> 44.1 ft.
Type of riser pipe Schedule 40 Flushjoint PVC Diameter of borehole 4" Type of backfill Cement grout to 5 ft. In situ sediment to 29.8 ft. Type of seal Bentonite Pellets Depth to top of seal 29.8 ft. Depth to top of sand pack 31.8 ft. Depth to top of screen 34.5 ft. Type of screened section 34.5 ft. I.D. of screened section 2" Depth to bottom of well 44.5 ft. Depth of borehole 47 ft.	17 P. 7 P. 7 D. 7 P. 6 7		I.D. of surface casing 3" Type of surface casing Steel with locking cap 1.D. of riser pipe 2"	
Type of seal Bentonite Pellets Depth to top of seal Depth to top of sand pack Depth to top of screen Type of screened section Olo" slotted schedule 40 PVC I.D. of screened section 2" Depth to bottom of well Depth of borehole 44.5 ft.			Type of riser pipe Schedule 40 Diameter of borehole 4"	_
Depth to top of seal Depth to top of sand pack Depth to top of screen Type of screened section Olo" slotted schedule 40 PVC L.D. of screened section 2" Depth to bottom of well Depth of borehole 44.5 ft.	•			
Depth to top of screen Type of screened section O10" slotted schedule 40 PVC I.D. of screened section 2" Depth to bottom of well Depth of borehole 44.5 ft.			Depth to top of seal	29.8 ft.
Type of screened section				
Depth to bottom of well Depth of borehole 44.5 ft. 47 ft.			Type of screened section	34.5 ft.
Depth to bottom of well Depth of borehole 47 ft.			I.D. of screened section2"	_
Depth of porenoie			Depth to bottom of well	44.5 ft.
			•	47 ft.
REPORT OF MONITORING WELL W-2				
		REPORT		
RAWN BY: ICHECKED BY: IPROJECT NO: 82C2467 IDATE: 9/26/83 FIGURE NO	DRAWN BY	HECKED BY IPROJ	ECT NO: 82C2467 IDATE:	9/26/83 FIGURE NO

	LOG of BORING No. W-2 DATE 8/19/83 SURFACE ELEVATION 44.1 LOCATION See Plate					
SAMPLES	SAMPLINGE H	DESCRIPTION	Plate ELEVATION	OVA Sold ppm)		
-	3	Black organic, silty, fine Sand	37.6	<1		
5	19	Grey to tan medium to fine Sand, trace of mica		< 1		
10	13			<1		
15	9	• :		<1		
20	14			<1		
25	25	•	15.6	<1		
30 -	25	Brown coarse to medium sandy Gravel		1		
35 — -	42			1		
40 -	52	(1) 3½-inch O.D. split spoon sampler driven with 300-1b hammer		ND		
45 -	14		-2.9	1		
1	etion Dep	th 47 Feet Water Depth 5.27 Feet Da BEATRICE Project Number	te <u>11/1</u> <u>82</u> C 246			

1		Elevation of top of riser pipe	47.56 ft.
100 A 7 A 7 A 9 A 7		Ground Elevation	45.1 It.
		I.D. of surface casing 2.5" Type of surface casing Steel with locking cap	
		I.D. of riser pipe	sh joint PVC
		Diameter of borehole4"	
		Type of backfill Cement grout to 5 In situ sediment to	ft. 10 ft.
		Type of seal Bentontie Pellets Depth to top of seal	5.1 ft.
		Depth to top of sand pack	7.5 ft.
		Type of screened section	10.0 ft.
		I.D. of screened section 2"	
<u> </u>			
¥.		Depth to bottom of well	20 ft.
Ľ		Depth of borehole	20 ft.
	REPORT	OF MONITORING WELL SW	1-2
DRAWN BY: LGR CH	ECKED BY: PROJ	ECT NO: 82C2467 DATE: 9	726/83 FIGURE NO

	LL & of BORING No.SW .					
	DAT		30/83 SURFACE ELEVATION 45.1 LOCATION See	Plate		
O DEPTH, 11.	/ SAMPLES	SAMPLING E	DESCRIPTION	ELEVATION	OVA So 1 (Ppm)	
5 .	1 1 1 1	23	Tan fine Sand, trace of mica		<1	
	1	18	- with medium Sand		< 1	
10	1 1 1	11			<1	
20	1 1 1 1	10	· ;		< I.	
	1	8	- trace of gravel	23.1	<1	
	1.1.1.1.1.		(1) 3-1/2 inch O.D. split spoon sampler driven with 300 lb. hammer			
	1.1.1.1.1					
6	1 1		th 20 Feet Water Depth 4.42 Feet Da	te 11/17/	63	
1		etion Dep t Name	th 20 Feet Water Depth 4.42 Feet Da BEATRICE Project Number			



	LOG of BORING No. W-3					
	DA.	TE	SURFACE ELEVATION 45.0 LOCATION See	Plate		
ODEPTH, II.	SAMPLES	SAMPLING E	DESCRIPTION	ELEVATION	OVA Soff Soff	
5						
10		38	Brown fine Sand, trace of silt, trace of mica		1.5	
15	1 -1 -1	13			< 1	
20	7-1-1	20	- becoming grey with trace of medium Sand .		ND	
25	1 1 1	٤			2	
	1	20	Grey coarse to fine sandy Gravel, trace of	16.5	-	
30	1-1-1-1	20	mica		1	
35		14			-	
40		50	(1) 3½-inch O.D. split spoon sampler driven with		< 1	
45		23	300-1b. hammer.	-2.0	1 7/83	
1		etion Dep		R2 C 2/4		
10,	ojes	t Name _	BEATRICE Project Number	<u>-54</u> 4 24!	·	

Ground Elevation 43.2 ft. L.D. of surface casing 3" Type of surface casing Steel with locking cas I.D. of riser pipe 2" Type of riser pipe Schedule 40 flush joint PVC Diameter of borehole 4" Type of backfill Cement grout to 5 ft. In situ sediment to 27.5 ft. Type of seal Bentonite Pellets Depth to top of seal 27.5 ft. Depth to top of sand pack 30 ft. Depth to top of screen 32 ft. Type of screened section 2" I.D. of screened section 2" I.D. of screened section 2" REPORT OF MONITORING WELL W-4 REPORT OF MONITORING WELL W-4		. Flevation of top of riser p	45.88 ft.
I.D. of surface casing 3" Type of surface casing Steel with locking cas I.D. of riser pipe 2" Type of riser pipe Schedule 40 flush joint PVC Diameter of borehole 4" Type of backfill Cement grout to 5 ft. In situ sediment to 27.5 ft. Depth to top of seal Bentonite Pellets Depth to top of seal 30 ft. Depth to top of sard pack 30 ft. Depth to top of screen 32 ft. Type of screened section 310" slotted schedule 40 PVC I.D. of screened section 2" Depth to bottom of well 42 ft. Depth of borshole 45 ft.	TO A THE SECOND		43.2 ft.
Type of riser pipe Schedule 40 flush joint PVC Diameter of borehole 4" Type of backfill Cement grout to 5 ft. In situ sediment to 27.5 ft. Type of seal Bentonite Pellets Depth to top of seal 30 ft. Depth to top of screen 32 ft. Type of screened section 30 ft. LD. of screened section 2" Depth to bottom of well 42 ft. Depth of borehole 45 ft.		I.D. of surface casing Type of surface casing	
Type of backfill Cement grout to 5 ft. In situ sediment to 27.5 ft. Type of seal Bentonite Pellets Depth to top of seal Depth to top of sand pack Depth to top of sand pack Depth to top of screen Type of screened section Jolo" slotted schedule 40 PVC I.D. of screened section Depth to bottom of well Depth of borehole A2 ft. Depth of borehole A2 ft. Depth of borehole A2 ft.		Type of riser pipe Schedule 40 flus	sh joint PVC
Type of seal Bentonite Pellets Depth to top of seal Depth to top of sand pack Depth to top of screen Type of screened section Olo" slotted schedule 40 PVC I.D. of screened section 2" Depth to bottom of well Depth of borehole REPORT OF MONITORING WELL W-4			ft.
Depth to top of seal Depth to top of sand pack Depth to top of screen Type of screened section Olto slotted schedule 40 PVC I.D. of screened section Depth to bottom of well Depth of borehole A2 ft. Depth to bottom of well A2 ft.		In situ sediment	to 27.5 ft.
Depth to top of sand pack Depth to top of screen Type of screened section Join slotted schedule 40 PVC I.D. of screened section 2" Depth to bottom of well Depth of borehole REPORT OF MONITORING WELL W-4			27.5 ft.
Depth to top of screen Type of screened section	基	·	
Type of screened section Olo" slotted schedule 40 PVC I.D. of screened section 2" Depth to bottom of well Depth of borehole REPORT OF MONITORING WELL W-4		 Depth to top of sand pack 	
Depth to bottom of well Depth of borehole REPORT OF MONITORING WELL W-4		Type of screened section	32 ft.
Depth to bottom of well Depth of borehole REPORT OF MONITORING WELL W-4			
Depth to bottom of well Depth of borehole REPORT OF MONITORING WELL W-4			
Depth of borehole 43 ft. REPORT OF MONITORING WELL W-4			42 ft.
REPORT OF MONITORING WELL W-4		·	45 ft.
		- Debili oi potenole	
PRAWN BY: LGR CHECKED BY: PROJECT NO: 82C2467 DATE: 9/26/83 FIGURE NO	REPOR	RT OF MONITORING WELL W-	4
	DRAWN BY: LGR CHECKED BY: PR	OJECT NO: 82C2467 DATE: 97	26/83 FIGURE NO

	LOG of BORING No. W-4 DATE 8/25/83 SURFACE ELEVATION 43.2 LOCATION See Plate				
o DEPTH, ft.	SAMPLING CHESISTANCE	DESCRIPTION	ELEVATION	Soil (ppm)	
5	35	Tan to grey medium to fine Sand, trace of mica, trace of organics.		1	
10-	11		29.7	<1	
15	8	Tan to orange medium to fine Sand		<1	
20	11			<1	
25	15	- some coarse sand, trace of mica		1.5	
30-	33		11.2	< 1	
35	50	Tan to grey coarse to fine sandy Gravel trace of silt, trace of mica.	-	-	
40	10 ⁽²⁾	(1) 3½-inch O.D. split spoon sampler driven with 300-lb. hammer (2) 2-inch O.D. split spoon sampler driven with 300-lb. hammer	-1.8	<1 -	
Compi		th 45 Feet Water Depth 2.97 Feet Da BEATRICE Project Number	ste 11/17 82C246		

	Elevation of top of riser pip	47.81 ft.
(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Ground Elevation	45.3 ft.
	1.D. of surface casing 3" Type of surface casing Stee with locking cap	
	Type of riser pipe	40 Flush joint PVC
	Type of backfill Cement grou	
	In situ sec	liment to 25 ft.
	Type of seal Bentonite Pell	lets 25 ft.
	Depth to top of seal	
	Depth to top of sand pack	27.7 ft.
	Type of screened section	30 ft.
	I.D. of screened section	2"
		40 ft.
	Depth to bottom of well	41 ft.
	Depth of borehole	
RE	PORT OF MONITORING WEL	L W-5
RAWN BY: LGR CHECKED BY:	PROJECT NO: 82C2467	TE: 9/26/83 FIGURE NO
	WOODWARI	O-CLYDE CONSULTANTS

		LOG of BORING No. W-5		
DAT	E 9/24	/83 SURFACE ELEVATION 45.3 LOCATION See	Plate	
ODEPTH, ft.	SAMPLING E RESISTANCE	DESCRIPTION	ELEVATION	OVA Soil (ppm)
-	14	Brown silty, gravelly fine Sand, trace of organics	42.8	1.5
5 —	87	Brown gravelly coarse to fine Sand		< I
10	61			1.5
15	50 3''	• :		-
20	45			<1
25	80 ⁽²⁾	•		<1
30	88 ⁽³⁾			1
35	60			1
40 1 1 1 1 1 1	150	(1) 3%-inch O.D. split spoon sampler driven with 300-lb hammer. (2) Sampled with drillers open ended "A" rod (3) Offset approximately 30 feet south of original borehole	4.3	
	tion Dep Name _		82 C 24	67

Market Company

4	Elevation of top of riser pipe	
	Ground Elevation	
THE PROPERTY OF THE PARTY OF TH	FEF	
	Type of surface casing steel with locking cap	
	Type of riser pipe 2" Type of riser pipe schedule 40	flush joint PVC
	Diameter of borehole4"	- .
	Type of backfill cement grout	
	Type of seat Bentonite Pellets	
	Depth to top of seal Depth to top of sand pack	3.9'
	Depth to top of screen	11.6'
	Type of screened section	
	I.D. of screened section 2"	
	Depth to bottom of well	16.4'
	Depth of borehole	43.3'(a) (a) Backfill: sand- pack from 20' to 6.5', in situ sediment below 2
REPO	RT OF MONITORING WELL	SSW-6
CRAWN BY KRM CHECKED BY CHECKED	ROJECT NO: 82C2467B DATE	7-20-84 FIGURE NO

	LOG of BORING No. SW-6						
DA		7/84 SURFACE ELEVATION	LOCATION				
ODEPTH, ft.	SAMPLING RESISTANCE	DESCRIPTION	ELEVATION	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	OTHER -
	2	Dark brown organia					10
	14	Tan sil					520
10	23	Becomin Scale envor			!		>1000
20	23	Tan sil Becomin Tan fini sand, ti					100
20 _	13	mica —					40
1 3	7						22
30	19						28
	19	Becoming to fine sand, transfer ine gravel,				÷	55
	10	trace of					25
40 _	71	Tan coarse to medium sand and coarse to fine gravel, trace of silt					43
‡	47						53
50 _	137	Cobbles, boulders					10
60		Granite Bedrock -NX Core -End of borehole					
70 _							
80 _		1. 3½-inch OD split spoon sampler driven with 300 lb. hammer.	·	•			
90		1) OVA reading in ppm					
	etion Dept t Name	h 32.5 Feet Water Depth 5' Beatrice	Feet Project N		7-1 82C24		

REPORT OF MONITORING WELL SW-6

DRAWN BY LGR CHECKED BY PROJECT NO: 82C2467B DATE 7/17/84 FIGURE NO

pack from 32.5'

to 16.4'

	LOG or BURING No.		SSW-6	
DATE _	/20/84 SURFACE ELEVATION	LOCATION		
SAMPLES SAMPLES SAMPLING SAMPLING RESISTANCE	DESCRIPTION	ELEVATION	WATER CONTENT, % LIQUID LIMIT %	PLASTIC LIMIT, % OTHER (1) TESTS (1)
	(see log of SW6 for 0-25 feet)			
10 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Scale SRB OR N NX NX END OF BOREHOLE (1) OVA reading in ppm			7/20/84
3	reptilireet water peptil	Feet	Date	2/672
Project Name	Beatrice	Project !	Number 820	C#0/0

KRM

DRAWN SY

•	Elevation of top of riser pipe	(~+3½ inches)
	Ground Elevation	
	I.D. of surface casing 3" Type of surface casing steel with locking cap	<u>.</u>
	I.D. of riser pipe 2" Type of riser pipe schedule 40 f Diameter of borehole 4"	lush joint PVC
	Type of backfill cement grout to In situ sedimen	5 feet to 24.4 feet
	Type of seal Bentonite Pellets Depth to top of seal	<u>24.4'</u> 28.0'
	Depth to top of sand pack Depth to top of screen Type of screened section 010" slotted schedule 40 PVC	29.7'
	I.D. of screened section 2"	
	Depth to bottom of well Depth of borehole	<u>39.4'</u> 41.0'
	REPORT OF MONITORING WELL	W-7
1		7-23-84 FIGURE NO

		LUG of BORING No.	h	1-7			
D	ATE 7-23-	SURFACE ELEVATION	LOCATION	ł			
DEPTH, ft.	SAMPLES SAMPLING RESISTANCE	DESCRIPTION	ELEVATION	WATER CONTENT, %	LIQUID LIMIT. %	PLASTIC LIMIT, %	OTHER E
-	- 4 ⁽¹⁾	Dark brown organic silty fine sand					2
10 -	12	Brown medium to find sand, trace of organics, trace of silt					NR ⁽⁴ 100
20 <u>-</u>	11 18 ⁽²⁾					:	350 1000
	8	Becoming tan medium to fine sand, trace silt.		. No	Y	<u> </u>	3 12
30 _	6		Scalu	Ογ.			NR NR
40 -	5			-			NR
	2			· I			NR
50 -	7 5						NR NR
	7	Becoming grey medium to fine sand, trace of silt.					1
60 _	15			:			NR '
	6		·				0.5
	10						NR
70 _	8						NR
	5						NR
80 _	5	1. 3½-inch O.D. Split Spoon sampler driven with 140 lb hammer.					NR
90 _	- - -	 Offset approximately 3 feet west of the original borehole due to obstruct 3½ inch OD split spoon sampler driven No recovery. (1)0VA reading in ppm 	ion. with 300	1b hai	mer.		•
Comp	pletion Dep	th 41 Feet Water Depth 2	Feet Project f			-23-8	14
1. 101			101000	14111061	<u> </u>	. + . , <u> </u>	

	LC i of BORING No.B-1 83 SURFACE ELEVATION	Plate	_
SAMPLES TAMPLES SAMPLES TAMPLES TAMPLES TAMPLES RESISTANCE	DESCRIPTION	ATIO	Sof1
88 13 5 14 10 11 13 10 11 10 11 11 11 11 11 11 11 11 11 11	Tan fine sand, trace of medium sand Tan to gray fine sand, trace of coarse to medium sand Tan gravelly coarse to fine sand Tan fine sand, trace of medium sand (1) 3-1/2 - inch 0.D. split spoon sampler driven with 300 lb. hammer	40.8 38.8 36.8 34.3	ND <1 <1 <1 <1
E	Depth 11 Feet Water Depth NA Feet The Beatrice Project Nu	Date <u>8/</u> mber <u>820</u>	

	LC A of BORING No. B-1							
DAT	TE <u>8/30</u>	/83 SURFACE ELEVATION 46.8 LOCATION	See Place					
O DEPTH, 11.	SAMPLING (RESISTANCE	DESCRIPTION	ELEVATION OVA Soft					
5 1 1	9 38 25	Tan to gray fine sand, trace of medium sand	1.					
10 _	18	3	35.8 <1					
		(1) 3-1/2 - inch O.D. split spoon sampler driven with 300 lb. hammer						
-	1							
Com	II pletion De	epth Feet Water Depth NA Feet	Date6/30/					
1			lumber <u>8202467</u>					

LC of BORING No. B-?						
DATE	8/31/	83 SURFACE ELEVATION 46.6 LOCATION See	Plate			
O DEPTH, 11.	SAMPLINGÉ RESISTANCE	DESCRIPTION :	ELEVATION	00A Soft (nom)		
	-	Brown to black Organic silty fine Sand	44.6	1.4		
5	14	Tan fine Sand, trace of medium sand		7		
1	35			2		
	20			1.2		
10	14	·	35.6	< 1		
		(1) 3-1/2 - inch O.D. split spoon sampler driven with 300 lb. hammer				
C	etion De	oth 10 Feet Water Depth NA Feet D	ate <u>8/31</u>	/83		
		pth 10 Feet Water Depth NA Feet D Beatrice Project Number				
1 0150	_ שתופרי		· ———			

_ **3**

- -

DATE _9/1/)	LOG of BORING No. B-4 SURFACE ELEVATION 46.5 LOC. TION See	Plate	
SAMPLES SAMPLES SAMPLING	DESCRIPTION	ELEVATION	Soft
4	Brown to black Organic, Silty Coarse to fine Sand	44.5	30
9	Tan Silty fine Sand, trace of Organics, trace of medium Sand	42.5	50
26	Tan to brown fine Sand, trace of medium Sand,		1000
Completion De		ate 9/1/8	
Project Name	Beatrice Project Number		

	LOS of BORING No. B-5													
DATE 9/	/1/83	SURFACE ELEVATION 44.3 LOCATION 5	ee Plate											
SAMPLES (1)	RESISTANCE	DESCRIPTION	ELEVATION	QVA1 (ppm)										
1 "		lack Organic silty fine Sand	42.3	<1										
5 2	11 20 Ta	an fine Sand, trace of medium Sand		<1 3 >100										
10	14		34.3	9										
111	(1	1) 3-1/2 - inch O.D. split spoon sampler driven with 300 lb. hammer												
1		• •												
11111		•												
1														
1														
11111														
Completion	0.00015	10Feet Water DepthNAFeet D	ate9/1/	<u> </u>										
Project Na														

DAT	E9/1/	SURI CE ELEVATION 45.0 LOC ION See	Plate	
O DEPTH, 11.	SAMPLINGÉ RESISTANCE	DESCRIPTION	ELEVATION	OVA Sofi (ppm)
ľ	5	Black to tan organic silty fine Sand	43.0	< 1
]	8	Tan fine Sand, trace of medium Sand		< 1
5 —	24			1
]	30	•		1
10	27		35.0	1
		(1) 3-1/2 - inch O.D. split spoon sampler driven with 300 lb. hammer		
Com	pletion De		ate 9/1/8	
1	ect Name .		82C2	467

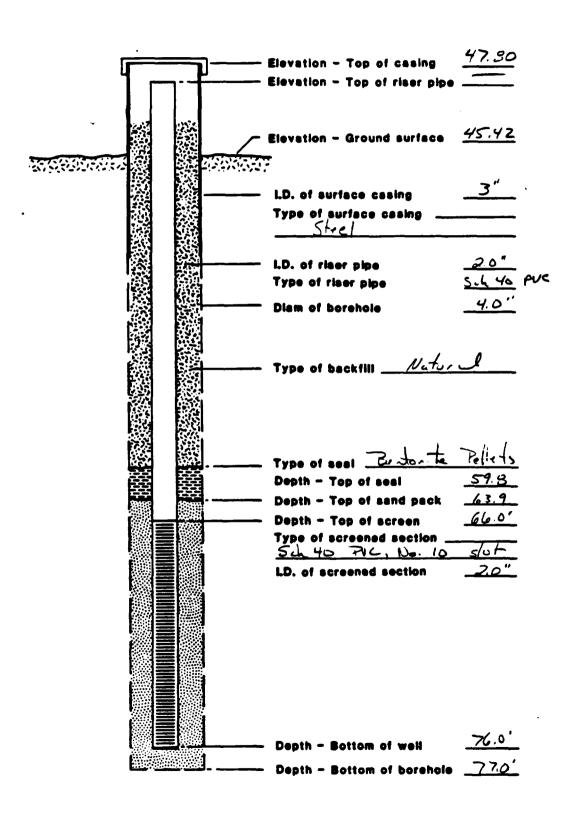
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DAT	E <u>9/2</u>	LC3 of BORING No.B-7 2/83 SURFACE ELEVATION 44.6 LOCATION See	Plate	
O DEPTH, 11.	SAMPLING (E) RESISTANCE	DESCRIPTION	ELEVATION	OVA Soff (ppm)
	3	Brown to black organic silty fine Sand	42.6	< 1
-	19	Tan to brown fine Sand		< 1
5 —	24	-with trace of medium sand		1.4
1 4	25			1.8
10	25		34.6	-
		(1) 3-1/2 - inch O.D. split spoon sampler driven with 300-lb. hammer		
Į.	letion De	•	Date9/2/	
Proje	ct Name _	Beatrice Project Number	er <u>820246</u>	2

4		LC 7 of BORING No. B-8	,	
DAT	E — 9/2	_	e Plate	
O DEPTH, N.	SAMPLING E	DESCRIPTION	ELEVATION	Soll
[]	2	Black organic silty fine Sand	41.7	<1
5 —	24	Brown fine Sand, trace of medium Sand		2
1 1	26			1.2
10	21	- medium to fine sand	33.7	1
		(1) 3-1/2 - inch O.D. split spoon sampler driven with 300 lb. hammer		
1	oletion De		ate 9/2/6	
Proje	ct Name _	Beatrice Project Number	- 04CZ46/	

S.		GU	100	⊸ Vater		1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	EAST D	ROVIDENCE			DATE						
	. Ua	Coorbus									HOLE NO.	O	V8				
		ton Geophys									LINE & STA.						
		IT TOabo							OFFSET								
S.	MPLES SI	ENT TOTake	n at	Sit				OUR JOB NO	86-1	63	SURF. ELEV.						
											Dete	Yi	me				
İ		IND WATER OBSE					CASING			START	_ ,			•.m			
A _	<u>2'7"</u>	after COM	P. Hour	•	Туре		HW	None	None		10/4/85 10/4/85	_		- 5.W.			
]]	Size i D		4"			TOTAL HR	5.			_ `			
At -		after	Hour	rs	Homme		300#		BIT	INSPECTOR		EASI	WOC	<u>a</u>			
_					Hamme	r Fall	24"			SOILS ENGA							
	OCATIO	N OF BORING					wo	ods						_			
1	Casing	Sample	Type		ows per		Moisture	Strata	SOIL IDEN	ITIFICATION			AMPL	,			
DEPTH	Blows	Depths	of		Sample	er Ta	Density	Change	Remarks inclui soil etc. Rock-	de color, grade color, type, cor	ation, Type of						
18	1001	From - To	Батре	0-6	6-12	1 12-18	or Consist.	Elev.	ness, Drilling tir	ne, seams and	d etc.	No	Pen	Rec.			
1		No sample					ł	l i	General de	scription	of soil						
1						∔			from wash	- Brown	fine to m	ed.					
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	GROUND	SURFACE TO	1	41	·	USED		CASING:	THENIn	stalled :	ve11						
_	omple Typ	•			Proport	ions Use		140b Wf. x 3	0" fall on 2"0 D.	Sampler	1 SUMMARY:						
	•	ored W=Washed		1	troce	01010	~	esionless Den O-10 Loo	sity Cohesive	Consistency		Barin	9 —				
		bed Piston A=Auger V=Val	ne Taat	1	httle some	10 to 20°	70 0/	0-30 Med. Di	ense 4-8	Soft 30 M/Stiff		Corin _ cles	<u> </u>				
		ted Thinwall	1451		and	35 10 50	- 1 -	10-50 Den 10 + Very De		Stiff V-Stiff	HOLE		OW8	3-S			

INSTALLATION REPORT MONITORING WELL No. W-8





SHEET 1 OF 2

70	Was	ton Geophy			n		ADDRESS -				HOLE NO.				
PR	OJECT NA	ME ECONOMI	. Pla	nnir	g Gro	ար	LOCATION -	Wobur	n, Mass		UNE & ST.	١			
RE	PORT SEN	it to <u> </u>	ove_	. 64+		•	PRO	0J. NO	86-1	63	SURF. ELE				
<u> </u>	_										Dote		ime		
	2'9"	UND WATER OBSE					CASING	SAMPLER		START	9/26/8	5 _		6.# 9.#	
u _			PLO HOU	"	Type Size I D.		HW NW .	_ <u>s/s</u> 1_3/8'		COMPLETE TOTAL HRS	B			_ 8.7	
M _		_ after	Hou	ırs.	Hommer		300#	140#	BIT	BORING FOR	REMANR	Pas	two	od	
			•		Hommer	Fall	24"	30"	<u>Dia</u>	SOILS ENGA			<u> </u>		
L	OCATIO	N OF BORING	<i>_</i>												
PTH	Casing Blows	Sample Depths	Type		ows per (Moisture	Strata	SOIL IDEN	ation Type		SAMP			
9	per	•	Sample	From	, ,	To	Density or	Change	soil etc. Rock-o	color, type, cor	idition, hard	. ├─	T	T_	
	foot	0'-2'	D	1 0-6	1 6-12		Consist.	Elev	Brown fin		7 616.	No	\leftarrow	Rec	
		V -Z				2	10036		Brown 11n	ie svin			24"	6	
		2'-4'	D	1	3	4	W/100se	4.		•		2	24	19	
		4'-6'	D	8	13		W/m/d		Brown fin	e SAND &	Fine to		╁╌	╫	
		_		ļ		22			medium gra	vel,tr.	of silt		$oxed{\Box}$		
]					-	\vdash	 	
		9'-11'	D	5	5	6	W/loose	Ì					Į,		
		2 -11	<u> </u>	-	3	9	 M\ TOORG					4	24	13	
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		14'-16'	В	5	5	5	"					5	24	114	
i			 	-	 	<u> </u>						-	<u> </u>	-	
							1	18'6"							
		19'-21'	-	10	10	10	W/m/d	18 6	Brown fine	SAND w/	fine to		<u></u>	19	
						10			medium gra				+	 	
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		24'-26'	D	5	7	10	W/100se						Z4	17	
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		29'-31'	D	6	8	14	W/m/d					8	24	12	
						13]						二		
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		34'-36'	D	7	8	10	} "					F	74	720	
		34 -30				12		•				ŕ	+	-	
]	37'							
			 		-		1					<u> </u>	+	╁	
							1				سين سست		二		
	GROUND	SURFACE TO	62	<u>'</u>	Proporti	-	4 & 3 "(THEN			C) H4	MARY	-	
0:	Dry C=C	ored W=Washed			troce	O to 10	% Cohesi	ionless Den	sity Cohesive (Consistency	E			771	
		bed Pision A:Auger V:Vo	ne Test			10 to 20' 20 to 35	% io-	10 Loos 30 Med. Do	ense 4-8	M/Stiff	+ Hard Ro	ck Cori	19 13		
		bed Thinwall		-		35 to 50	_ 1 JU	50 Den: + Very De		Stiff V-Stiff	HOL	E NO) OW	18-I	

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TO	
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EAST	PROVIDENC	CE R	

SHEET__

_ 0F _2

Earth Boring

Rock Coring

HOLE NOOW8-D

Samples _

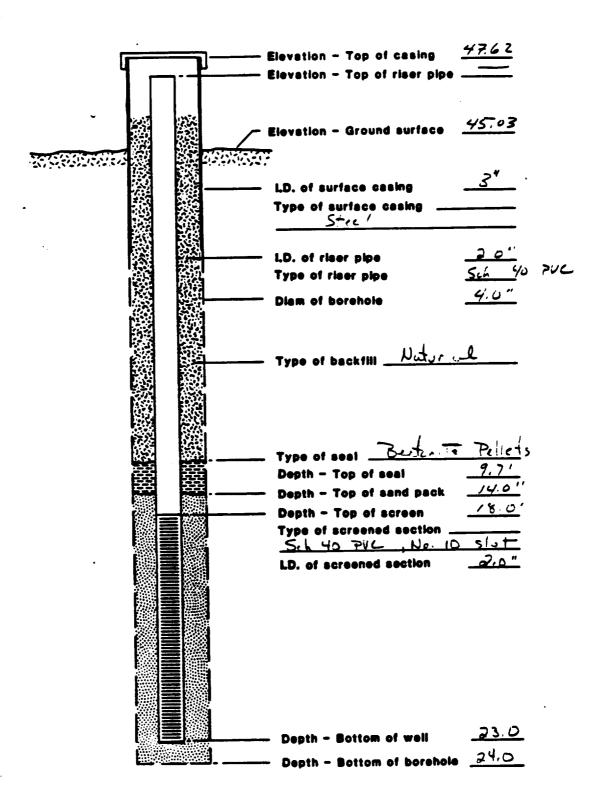
	100 WATER STREET	EAST	PROVIDENCE, R. I.	i	DATE
					HOLE NO V-8 OWS-D
~T NAME		- ADDRES			LINE & STA.
CT NAME T SENT TO			PROJ. NO.		OFFSET
FE SENT TO			OUR JOB NO. 86-163		SURF. ELEV

SA	MPLES S	ENT TO						OUR JOB NO). <u> </u>	86-163		SURF. ELEV.					
	GRO	UND WATER OBS	RVATIC)NS			CASIN	G SAMPL	LER (CORE BAR	START	Date	Yir	_	e.m		
A1 _		after	Hou	rs	Type Size i D.						COMPLETE TOTAL HRS	3.	_		1.M		
A1 _		ofterHours Hommer Wt							_	BIT	BORING FOR INSPECTOR SOILS ENGR				<u> </u>		
1	LOCATIO	N OF BORING															
ОЕРТН	Cosing Blows per	Sample Depths	Type	or	ows per Sample		Moistur Density	Stroto	Ren	SOIL IDENTIFICATION Remarks include color, gradation, Type a soil etc. Rock-color, type, condition, hard-				AMPL	E.		
۵	foot	From- To	Somple	0-6	6-12	i2-18	Consist		nes	s, Drilling tin	ne, seams and	l etc.		Pen			
		39'-41'	ם	16	14	13 25	W/m/c	43'		SAND w	m to com fine to	rse SAND &	10	24"	1"		
		44'-46'	D	16	17	23		43			um to coa	to coarse SAND		24'	9''		
						18		47'	& f	ine San vel and	d with co	Arse					
		49'-51'	D	173	3" 1	2/3"			Bro cos	wn very	dense me D & coar	edium to se gravel	6 12	24	18"		
				*8	_	*6			cob	bles, s	ilt						
			+ -				1							$\vdash\vdash$			
		@ 541	Refu	sal]						O	P			
		59'-61'	D	62	60	129			Pus	shed cob	bble		13	24"	0		
		62'-67'	C			173/4	"	61'6		Tubilog Coppie				51			
		62*-67*							GAB	BRO DIC	badly from the control of the contro						
		67'-72'	С					Note		enotes	·		C2	5'			
									2. 9 3. 5	" Seam 60% wate	@ 64' & :	8' Seam @ hile cori	70	5"			
							1				tting se	am .W. @ 80'			-		
		72'-77'	С							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			C3	51			
			<u> </u>														
								77'									
						1				Bottom	of Borin	g 77'					
						<u> </u>	1				<u> </u>						
S	GROUND	SURFACE TO _		1	Proport	USED_		"CASING: 140lb Wt.		1 on 2"O.D.	Sompler		SUMN	MARY	-		

1401b Wt. x 30" fall on 2" O.D. Sampler Cohesionless Density | Cohesive Consistency D=Dry C=Cored W=Washed 01010% trace 0-10 Loose 10-30 Med. Dense 30-50 Dense 50 + Very Dense O-4 Soft 30 + Hard UP = Undisturbed Piston 101020% tittle 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff TP=Test Pit A=Auger V=Vane Test 201035% some UT=Undisturbed Thinwall ond 351050%

INSTALLATION REPORT

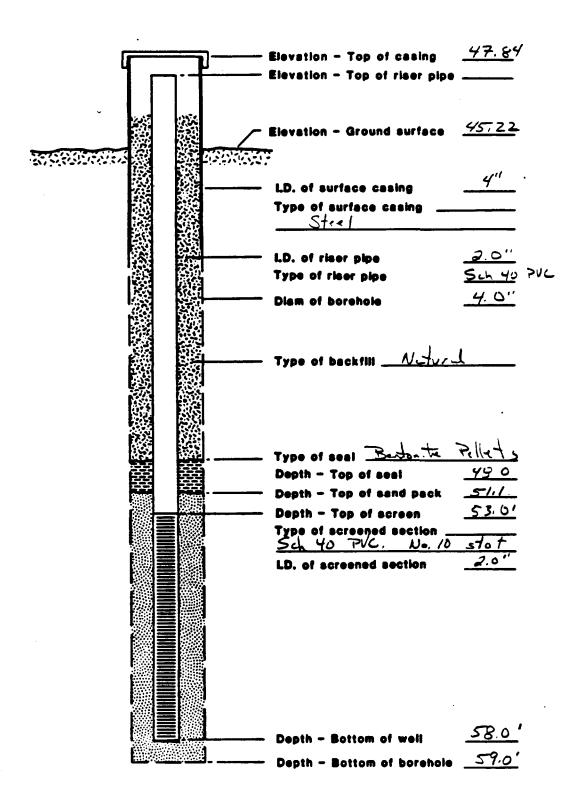
MONITORING WELL No. SW-B



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**	o Weston Geophysical				n	1.	4008555	Westho	oro Mass		HOLE NO.	9	<u>8-11</u>		
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		T TOabo									OFFSET				
CA	MDI FE CI	ENT TOTake	n at	Sit					86-1/	SURF. ELEV.					
J -											Date		me	=	
	GROU	IND WATER OBSE	RVATIO	NS			CASING	SAMPLER	CORE BAR.				_		
At_	31	ofter Com	D. Hou	,,	•		HW	None	None	START	10/4/85 10/5/85			, j.m.	
					Type Size I D		4"	None	<u>None</u>	COMPLETE TOTAL HRS	<u> 10/3/82</u>			. J.M.	
		alter					300#			BORING FOR	EMAN _R_	Easi	WOO	à	
A1 _			nou	"	Hommer		24"		- BIT	INSPECTOR .					
					Hammer	FOII				SOILS ENGR	-			_	
L	OCATIO	N OF BORING					Woo	ds							
	Casing	Sample	Type	Bi	ows per 6	5"	Moisture		SOIL IDEN	TIFICATION				_	
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핗	per	From - To	Fron	\	<u>ro</u>	l er i	Change	soil etc. Rock-d		N.					
	1001			0-6	6-12	12-18	Consist.	Elev	ness, Drilling tin	ne, seoms one	erc	NO	Pen	Rec.	
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	mple Typ			1	Proportio			40 b W1. ± 3	0" fall on 2" 0.0.	Sampler	1	SUM	MARY		
	· ·					01010	70	ioniess Den ·10 Loo	en Cohesive	•	+ Hard Rock		9 2	4-	
		bed Pision A:Auger V=Va	ne Tees	-		10 10 20	% io.	30 Med. D	ense 4-8	M/Stiff		Hes _		_	
		hed Thinwall		-		201035' 35 to 50	% 30·	50 Den			HOLE			-M	

INSTALLATION REPORT MONITORING WELL No. <u>CW-S</u>



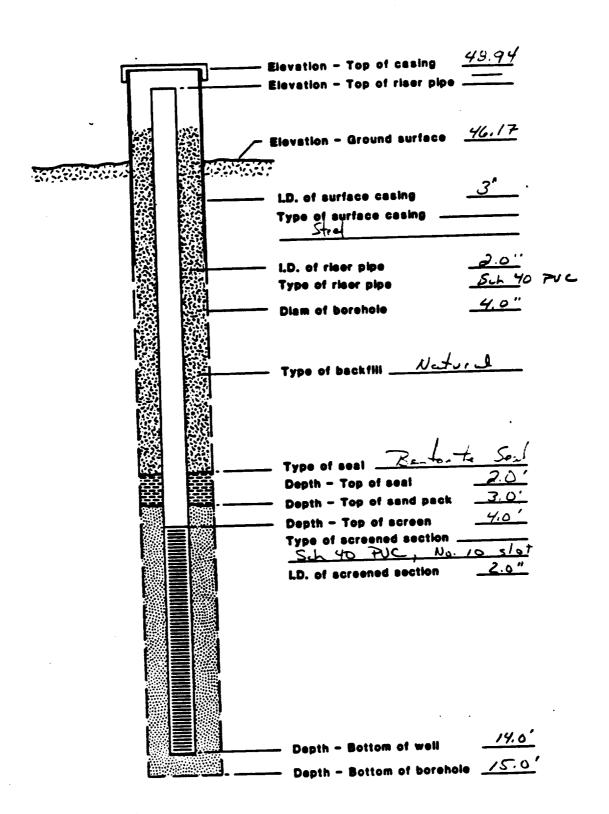


GUILD DRILLING CO., INC. 100 WATER STREET EAST PROVIDENCE, R I

SHEET _____ OF ____

GROUND WATER OBSERVATIONS AT 2'10" ofter Compt Pricer's AI	PR	POJECT NA	ston Geophy ME Economia IT TO	c_Pla	nnir	g Gro	սթ	LOCATION	<u>Wobur</u>	n, Mass		HOLE NO LINE & S OFFSET SURF. EL	TA.			
AI COLOR OF BORING LOCATION OF BORING LOCATI		GRO	UND WATER OBSE	RVATIC	NS	Туре		CASING HW	SAMPLER	CORE BAR.	START COMPLETE TOTAL HRS	10/3/1	85 85			• 8.W.
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No samples No samples	_	foot			0-6	6-12	12-18	Consist.	Elev				-	NO	Pen	Rec
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GROUND SURFACE TO 59¹ GROUND SURFACE TO 59¹ GROUND SURFACE TO 59¹ Somple Type 0:Dry C:Cored W:Washed Up:Undstribed Piston USED																
GROUND SURFACE TO 59¹ GROUND SURFACE TO 59¹ GROUND SURFACE TO 59¹ Somple Type 0:Dry C:Cored W:Washed Up:Undstribed Piston USED													<u> </u>			
Brown fine to medium SAND, w/medium to coarse gravel & cobbles & boulders Bottom of Boring 59' Installed 0.W. @ 63' GROUND SURFACE TO 59! Somple Type 0:Dry C:Cored W:Woshed UP:Undsived Policy Cohesiness Density Cohesiness Consistency UP:Undsivered Piston Brown fine to medium SAND, w/medium to coarse gravel & cobbles & boulders Installed 0.W. @ 63' CASING: THEN Installed 0.W. Somple Type 0:Dry C:Cored W:Woshed trace O1010% little 101020% COhesiness Density Cohesiness Consistency 0:0-0 Loose 0-4 Soft 30+Hard Rock Corin									43'							
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TP=Test Pit A=Auger V=Vane Test some 20to35% 30-50 Dense 8-15 Stiff UT=Undisturbed Thinwall and 35to50% 50 + Very Dense 15-30 V-Stiff HOLE NO	Sc D: UP TF	Dry C=Co P=Undistur P=Test Pit	pe ored W=Washed bed Piston A=Auger V=Va			trace little some	ons Usi 01010 ⁶ 101020 ⁶ 201035	% Con % S	I401b W1.x 30 esionless Den 0-10 Looi 0-30 Med. De	O"fall on 2"O.D. Sity Cohesive Se	Sampler Consistency Soft 30 M/Stiff	+ Hard	Earth (Rock () Sample	Boring Poring Ps	; <u>.5</u> 9	9'

INSTALLATION REPORT MONITORING WELL No. 100-9



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		ME Economi									LINE & STA.			
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SA	MPLES S	ENT TOTake	en et	-Sit			10	UR JOB NO	86-1	63	SURF. ELEV.			
Ar_	GRO	UND WATER OBSE			Туре		CASING	SAMPLER	CORE BAR.	I START	<u>0010</u> 10/10/85 10/10/85	<u>Yi</u>		- 9.R - 9.R
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		N OF BORING	,	,								=		
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141 4 "CASING: GROUND SURFACE TO USED . THEN installed well 1401b Wt.x 30" fall on 2"O.D. Sampler Cohesionless Density | Cohesive Consistency Somple Type Proportions Used 01010% D: Dry C: Cored W: Washed troce UP = Undisturbed Piston 101020% little some

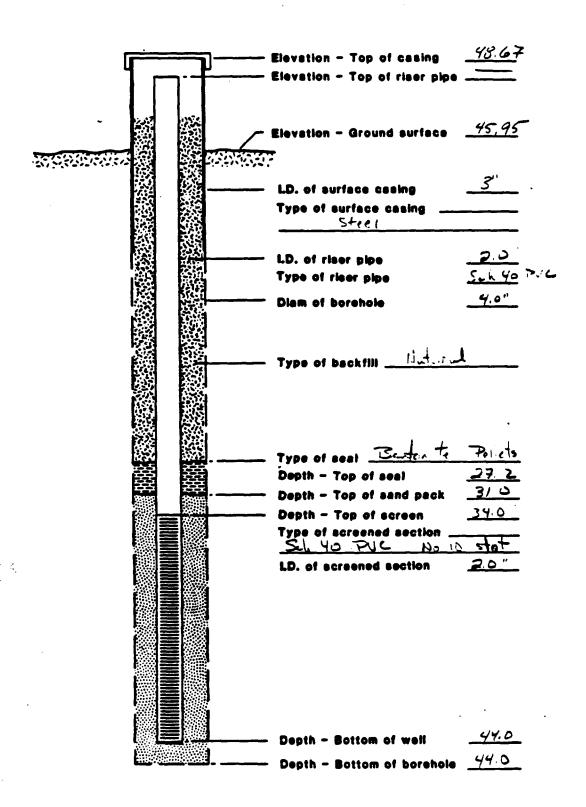
TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall

0-10 Loose 10-30 Med. Dense 30-50 Dense 50 + Very Dense 201035% 351050% and

0-4 Soft 4-8 M/Shift 8-15 Shift 15-30 V-Shift 30 + Herd

SUMMARY: Earth Boring 14 Rock Coring Samples _ HOLE NO 009-S

MONITORING WELL No. W-9

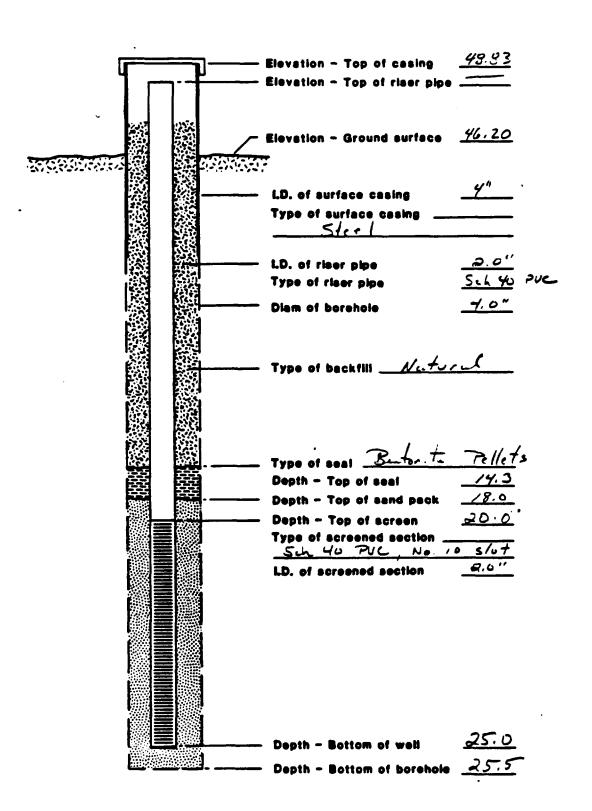


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-	DEPTH	Casir Blow per	1

PR	ROJECT NA PORT SEA	ston Geophys ME Economic IT TO	Pla	Cor	g Gro	<u>.p</u>	LOCATION	Westher Wohu	oro, Mass ro, Mass	63	HOLE NO. THE BESTA.			
A/ A/	GRO 3*-3"	und water obse after	P. Hou	/9	Type Size i D Hammer		HW 4" 300#	5/S 1-3/8 140#	NV-II	INSPECTOR	10/7/55 10/8/85 3.			9.7. 9.7. 9.7.
	OCATIO	N OF BORING:		1	Hammer	Fall	24"		Dramond	SOILS ENGI	<u> </u>			==
DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Somple	Fram	ows per 6 Sample	r Ta	Density Change soil etc. Re			color, type, co	ation, Type of ndition, hard- d etc.	SAMPLE No Pen F		
		2'- 3'	D D	2 10 14	3 79	5			6"Brown TOI Very coarse gravel, tre	e Brown S	SAND &	1	12" 54"	14
								5'-0"		···				
		4'- 5' 9'- 11'	D D	110 63 32	31	31			Very dense gravel, col				24"	1:
ote		14'-16'	D	30	24	32						5	5Ħ.,	10'
rill read ovan	eđ to	19'-21'	D	53 35	47	32						6	5ħ.	9
esin	g	24"-26"	D	37 103		94	min/ft		@28 '- 9"Ref	waal on i	Pallew hit	7	24	14
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		34 '-39'	C				5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		47° 2" PV	C Monitor	r well	C2	7	3
		30°- PP	С				5 2 5 5					C3	5"	5
	6801415	CHORDE	29			11853	5 2 5 2 4 & 3	ith = On	Bottom of		μ·-O"	E		
U	ample Tyl Dry C=C P=Undistur P=Test Pil	SURFACE TO pe ored W=:Aashed ibed Fision i A=:Auger V=:Va rbed Thinwall			some	-	% Cohe:	140 to W1.x 3 tionless De -10 Loc -30 Med. 0	30"fall on 2"0.0. naity Cohesive pse 0-4 Dense 4-8 nse 8-15	Sampler Consistency Soft 36 M/Stiff			4 Z	9' 15' 7

UT=Undisturbed Thinwall TOWN PEEES - BAST PEOV.

INSTALLATION REPORT MONITORING WELL No. 5ω -9



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PROJECT MANE Experience Planning Group. OCATION Johnson, Mark Description of South Description Descripti		Wa e	ton Geombye							•		HOLE NO	-7 GH	9-M	
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Al Offer Mours Size D 4" Hormer Wit 3006 Hormer Foil 24" COCATION OF BORING COCATIO		GRO	IND WATER OBSE	RVATIO	NS			CASING	SAMPLER	CORE BAR.			Ti	me	
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A CONTROL Mount Folia 2008 Service Ser											TOTAL HRS	3.			
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Sample Type D: Dry C: Cored W=Washed trace 0 to 10% UP: Undisturbed Piston title 10 to 20% TP: Test Pit A: Auger V=Vane Test Pit A: Auger Pit						1				20. Monito	r well, 2	PAC	-	 	\vdash
Sample Type D: Dry C: Cored W=Washed trace 0 to 10% UP: Undisturbed Piston title 10 to 20% TP: Test Pit A: Auger V=Vane Test Pit A: Auger Pit													 		
Sample Type D: Dry C: Cored W=Washed trace 0 to 10% UP: Undisturbed Piston title 10 to 20% TP: Test Pit A: Auger V=Vane Test Pit A: Auger Pit															
Sample Type D: Dry C: Cored W=Washed trace 0 to 10% UP: Undisturbed Piston title 10 to 20% TP: Test Pit A: Auger V=Vane Test Pit A: Auger Pit						-							-	├ ─┤	
Sample Type D: Dry C: Cored W=Washed trace 0 to 10% UP: Undisturbed Piston title 10 to 20% TP: Test Pit A: Auger V=Vane Test Pit A: Auger Pit															
Sample Type D: Dry C: Cored W=Washed trace 0 to 10% UP: Undisturbed Piston title 10 to 20% TP: Test Pit A: Auger V=Vane Test Pit A: Auger Pit															
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Sample Type D: Dry C: Cored W=Washed trace 0 to 10% UP: Undisturbed Piston title 10 to 20% TP: Test Pit A: Auger V=Vane Test Pit A: Auger Pit															
D:Dry C:Cared W=Washed trace 0 to 10 % Cohesionless Density Cohesive Consistency Earth Borng 26 UP = Undisturbed Piston little 10 to 20% Some 20 to 35% 30-50 Dense B-15 Stiff	e.			26	•	•						11	C 1 /4 /4		- 7
UP = Undisturbed Piston little IO to 20% 0-10 Loose 0-4 Soft 30 + Hard Rock Coring TP=Test Pit A=Auger V=Vane Test some 20to 35% 30-50 Dense 8-15 Stiff						•			ionless Den	ru tall on 2 0.0, nuity Cohesive	Consistency				
1PE 1851 PIT A:Auger V:Vane 1851 some 201035% 30-50 Dense 8-15 Stiff	UF	= Undistur	bed Piston	• -		liffle	10 1020	% O			Soft 30			· 9 —	
			-	7E 1057				% 30·	50 Den	8-15	Stiff			OW9)-M

INSTALLATION REPORT

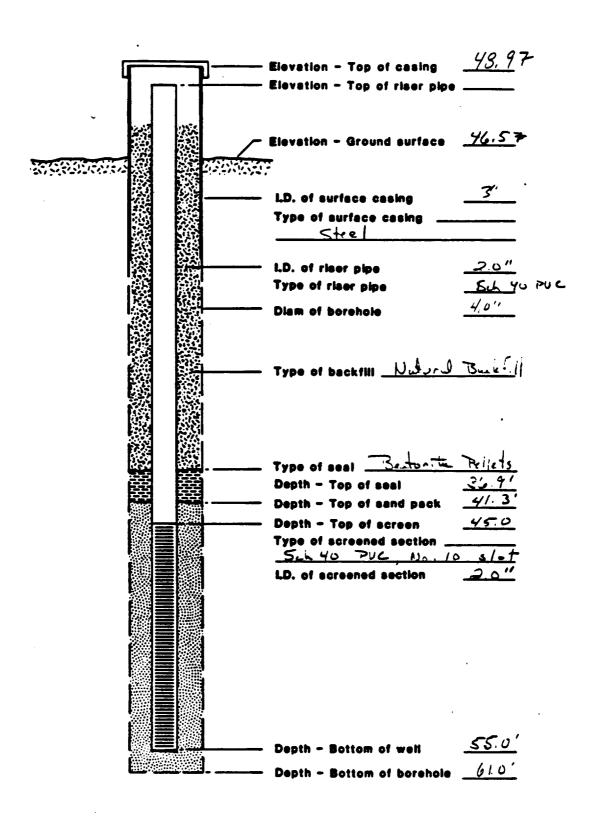
MONITORING WELL No. <u>OW-/</u>O

	•		
(F		Elevation - Top of casing	48.97
4		Elevation - Top of riser pipe	
	1 1 1		
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ž			46.56
		Elevation - Ground surface	7013 0
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30,300,300,000		•	-1/
	烈 / 33 — — —	LD. of surface casing	3"
		Type of surface casing	
		Stee 1	
		LD. of riser pipe	2.0"
l t		* *	C I WA BULL
į į		Type of ricer pipe	Sch 40 PUC
l <u>é</u>		Diam of borehole	4.0"
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			0
		Type of backfill	<u> </u>
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			,
[8]		Type of seal Benton to	Pellets
		Depth - Top of seal	0.5
E		<u>-</u>	2 0
		Depth - Top of sand pack	
f		Depth - Top of screen	2.5
		Type of screened section _	T .
		Sin 40 FUC No 10	slut.
		LD. of screened section	2.0"
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			•
i i			
ľ		Depth - Bottom of well	12.5
È			14.0
	and the second second	Depth - Bottom of borehole	17.0



-			100	NATER	STREET	ſ	EAST PRO	OVIDENCE,	, R I		30	-10 cm	-4	_		
TO	Wes	ton Geophy	ical	Cor	P	1	ADDRESSWestborn_ Mass					HOLE NO -10 SW-134				
		ME Economia									UNE & STA.					
		IT TOaba					PR	0J. NO								
SA	MPLES SI	ENT TOTake	n et	Ste	•		ou	R JOS NO	86=1	63	SURF. ELEV	<i>1.</i>				
										(Dete	•	me.			
	GROU	IND WATER OBSE	RVATIC	NS			CASING	SAMPLER	CORE BAR.							
At	41411	after	_ How	.	-		107.7	_s/s		START	-9/19/			- 9.M.		
					Type		HW .			COMPLETE		<u> </u>		_ } A:		
				- 1	Size i D.		4"	1 3/8'		TOTAL HRS	3. Yeman <u> </u>	P = =	****			
At _		_ after	Hov	n	Hommer	Wt	300	140#		INSPECTOR				-		
				1	Mammer	Fall	24"	30"		SOILS ENGA						
	OCATIO	N OF BORING	_				Woo	o ds								
=				_									=	ቖ		
Ξ	Casing	Sample	Type		ows per (Sample		Moisture	Strata		TIFICATION	-1.00 T.00	و ار	AMP	LE		
ОЕРТН	Blows per	Depths	of	From		, To	Density	Change	Remarks inclui soil etc. Rock-	color, gradi	ndition, 1 ype o	" 	,			
8	foot	From - To	Somple	0-6	6-12		Consist	Elev.	ness, Drilling tir	ne, seams and	s etc.	No	Pen	Rec		
												-	-	—		
		01-21	<u> </u>	1-	3	3	M/100		Brown fin			41	<u> </u>	10"		
		2'-4'	D	4	4	3		2'	medium to		gravel,	2	3/	13"		
		2 -4	<u> </u>	-	 "	6	}	j	some silt				12"	13		
			D	13	35	57	W/v/d	4'6"	Very fine			-	126	13"		
		4'-6'	 " -	13	- 22	43	W/V/G		medium sa	ind, tr. o	f silt	13	124	173		
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i					 			ł I	gravel, s			חו	├-	}		
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		9'-11'	D	26	21	19	į]]					┼	}		
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	GRO! IND	SURFACE TO _	14	1	<u> </u>	USED	4 "	CASING:	THEN Insta	11ed O U				ــــــــــــــــــــــــــــــــــ		
	onple Typ				Proporti				O" fall on 2" O.D.		^	Ci M	MAR	-		
_		ored Ma.Mozued		- 1	frace	0 to 10		ionless Den	naity Cohesive	Consistency	Ea	rth Bon		14'		
1	-	bed Piston		- 1	hitie	101020	% 0	1Q Loo	0-4	Soft 30		ch Cori	_			
		A:Auger V:Va	ne Test			201035	a/ 10	-30 Med. D		M/Shiff		mples				
		ted Thinwall		J	and	35 to 50	- 1	-50 Den	8-15	Stiff	HOL	E NO) (W-13		

INSTALLATION REPORT MONITORING WELL No. _W-10



GUILD DRILLING ...

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		eton Geophys									LINE & STA.			
		IT TOabo									OFFSET			
		ENT TOTake							86-1	63	SURF. ELEV.			
_										f	Date)	Yie	ne.	
,	GRO	UND WATER OBSE	MVA! IC	N5			CASING	SAMPLER	CORE BAR.	START	9/20/85			
A -		after	Hou	'8	Type		HW NW	s/s	NV2	COMPLETE	9/24/85			IA.
1				1	Size I D.		4" 3"	1.3/8		TOTAL HRS	s. Keman <u>R</u> _	-		3
At -		after	Hou	n	Hommer		300#	140#		INSPECTOR		CASI	7000	<u> </u>
 					Hammer	Foli	2411	30" ods	Dia	SOILS ENGA			===	-
	OCATIO	N OF BORING					WO	OGS						
Ŧ	Casing	Sample	Туре		ows per (Moisture	Strata		ITIFICATION		S	AMPL	F
DEPTH	Blows per	Depths	of	From	Sample	ir Ta	Density	Change	Remarks inclu- soil etc. Rock-	de color, gradi color, ivoe, col	stion, Type of			
8	foot	From- To	Sample	0-6	6-12	12-18	Consist.	Elev.	ness, Drilling to	ne, seams and	d etc.	No	Pen	Rec
		0'-2'	Α	1	2	1	D/100s	2	Brown fine	to medi	um SAND &	1	24	'16'
						2			some fine	gravel				
		2'-4'	D	2	3	4_	W/loos	3'6"				2	24	'14'
		41-61	<u> </u>	20	35	48	4		Brown SAN	& coars	e gravel.		 	111
		4'-0'		711	 	47	w/v/d		tr. of sil				7.4	111
							1							
	 	01 111	D	2/		1	17/-13	l l						113.61
		9'-11'	<u> </u>	24	30	24	W/m/d					4	24	'16'
	 				1		1	1						
							1							
		171 121		100		 	.	ŀ						114 61
		14'-16'	D	10	10	9	•	1				-2-	24	'10'
	 		 		 	 ´	1							
							1					 		
	ļ	19'-21'	<u> </u>	18	12	111	- "					6	24	'14'
	}		 	 		 8	1							
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		24'-26'	D	_20	17	13	₹"					7	24	13'
	<u> </u>				 	6	4	}				-		
	 	<u> </u>	 	 	<u> </u>	1	j					 		
]							
		29'-31'	D	17	13	12	W/m/d					8	24	'12'
					 		4					<u> </u>		
	 	 		 	 	1	†					-	 	-
		<u> </u>		1	1	1	1	33'6"						
		34'-36'	D	36	28	21	W/v/a		Gray SAND	& gravel	& Silt &	9	24	"15"
					ļ	34	4		cobbles -	Till				ļ
	}	han	 	 	 	 	4	1	L				 	-
1	 	37'2" 37'2"-38'8	-		 	 	1		Refusal w/ 37'2"-39'6			-	 	1
		3//		1	1	1	1		D / 2 - 39 6	-Large t	ontaet			L^-
	GROUND	SURFACE TO	41'			USED	3 & 4 "		THEN COT					-
	omple Ty	De		1	Proporti			140b W1.x 3	10" fall on 2" 0.D.	Sampler	1	SUMM	AARY	ζ,
		ored W=Washed			trace little	01010	79	-10 Loo	naity Cohesive			Borin Corjn		
1		rbed Piston I A:Auger V=Vd	ne Test	.	some	201035	0 10	•30 Med. D	ense 4-8	M/Stiff	Sam	ples .	<u> </u>	
3		rhed Thinwall		1	ond	35 to 50	- 1 30	-50 Den		Stiff	HOLE	NO	OW	110-

TOWN PRESS - EAST PROV.

	RE	OJECT I PORT SI MPLES
	At _	GR
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į		OCATI
	нд ЭО	Cosing Blows per foot
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GUILD	DRILLING	CO., INC.
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	GUILD 100 WATE		G CO., PROVIDENCE, F		į	DATE	0F_2 W-/:
PROJECT NAME		 	N PROJ. NO			LINE & STA OFFSET	
GROUND WA	TER OBSERVATIONS	CASING		00RE BAR.		Dore	Time E.m.

A1 _	OCATIO	ofter		ırs	Type Size I D. Hammer Hammer	Foli			BIT	BORING FOREMAN				
ОЕРТН	Casing Blows per	Sample Depths	Type	or	ows per (Sample	5" !r To	Moisture Density or	Strata Change	Remarks inclusion soil etc. Rock	NTIFICATION ude color, gradation, Type of -color, type, condition, hard-	de color, gradation, Type of SAN color, type, condition, hard-			
	1001	From- To	Sample	0-6	6-12	12-18	Consist. Min/ft	Elev.	ness, Drilling t	ime, seams and etc	No	Pen	Rec	
	ļ	41'-46'	- c				4		Gabbro DIO	RITE, interbedded	C1	<u></u>	4' 8	
							5]	w/Gneiss, very massi	Quarts & Granite,				
			+-	 	 		5½ 5	Ì	hera messi	ve	<u> </u>	├-	-	
		46'-51'	С				44				c2	51	41	
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							5 5 51 ₂]				匚	匚	
		51'-56'	c		-	-	5 5	}			C3	<u> </u>	4'8	
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		56'-61'	- c	-	 	-	51/2				C4	₽—	5'	
							6 5'	ŀ		•		二	二	
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							5	61'						
									Bottom	of Boring 61'	F-	┼─	├─	
							}	Note:	90% water	loss while coring		二	二	
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GROUND SURFACE TO "CASING: THEN USED . Sample Type 1401b W1.x 30"fall on 2"O.D. Sampler Cohesionless Density | Cohesive Consistency Proportions Used SUMMARY: Earth Boring D=Dry C=Cored W=Washed troce 01010%

UP = Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall

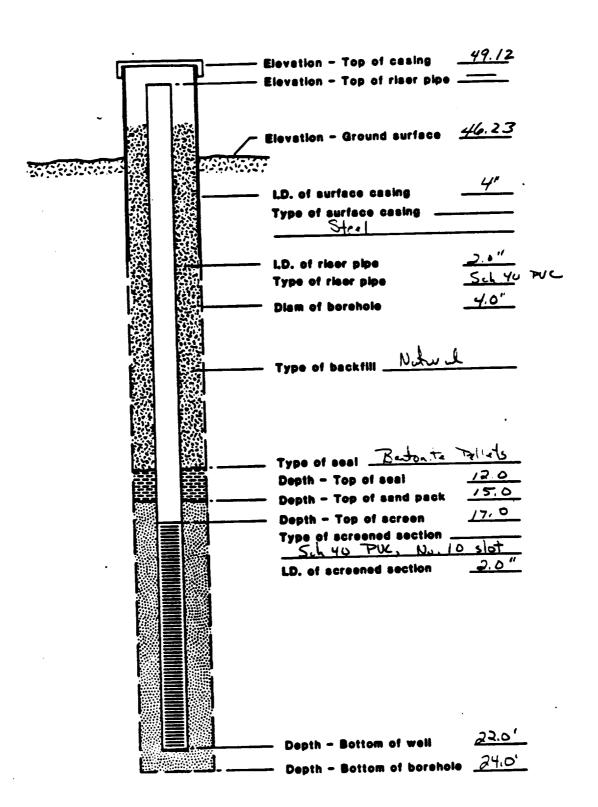
101020% tittle 201035% some ond 351050%

0-10 Loose 10-30 Med. Dense 30-50 Dense 50 + Very Dense

0-4 Soft 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff

30 + Hard Rock Coring Samples _ HOLE NOOW10-

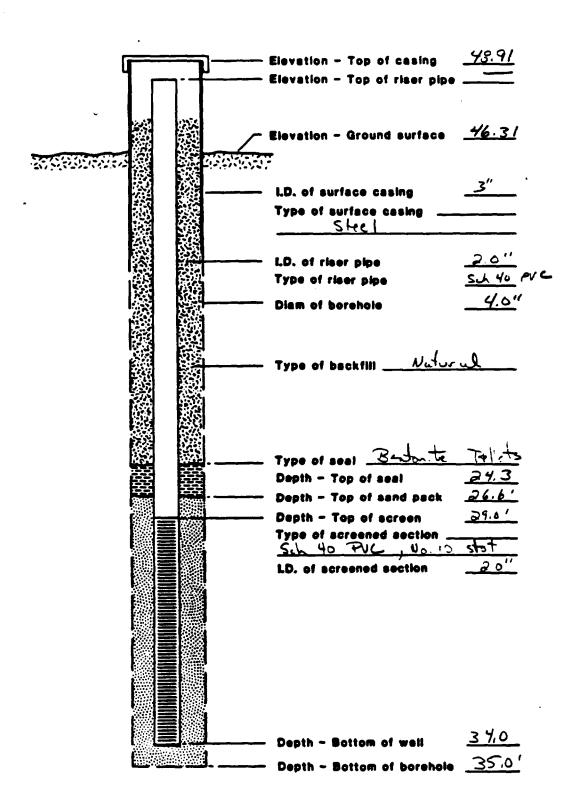
INSTALLATION REPORT MONITORING WELL No. SW-10



		-	GU			DR R STREET			CO	"INC.		SHEET 1		. of .	_1
		_			_	-		· -		•		HOLE NO.		0 M	Sil
										ro, Mass		LINE & STA.			
										m, Mass		OFFSET			
	REPORT :	SENT TO.	O Tab	OVE	. 64.	·		PR	0J. NO	86-1	62	SURF. ELEV.			_
									~ JUD NU			Dote		me	=
	G	ROUND W	ATER OBSE	RVATIC	NS			CASING	SAMPLER	CORE BAR.		9/25/85		10.0	_
A	314"		ofter Com	p. Hou	,, l	Туре		HW .	None	None	START	9/26/85			. į
ı				•	[Size i D.		4"			TOTAL HRS	B			. 6.
Af			after	Hou	ırs	Hommer	Wt	300#		BIT	BORING FOR	EMAN _R_	Pag	two	d
Ì				•	1	Hommer	Foli	24"			SOILS ENGA				_
	LOCAT	ION OF	BORING					Wo	ods						=
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Įξ	Casir	•	smple epths	Type		iows per (n Sample		Moisture	Strata	SOIL IDEN Remarks inclui	ITIFICATION	ation. Two of	5	AMP	Œ
AL AUG	per		m - To	Батон				Density or	Change	soil etc. Rock-	color, type, cor	ndition, hard-		T-	_
ئے	1001		و عصصت		0-6	6-12	12-18	or Consist.	Elev.	ness, Drilling fir	ne, seams and	t etc.	No	Pen	Re
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Installed O.W. GROUND SURFACE TO USED _ "CASING: THEN _ 140 lb Wt.x 30" fall on 2"0 D. Sampler Cohesionless Density | Cohesive Consistency SUMMARY: Earth Baring 24 Somple Type Proportions Used D=Dry C=Cored W=Washed 01010% trace O-IO Loose IO-3O Med. Dense 3O-5O Dense 5O + Very Dense 0-4 Soft 4-8 M/Shift 8-15 Shift 15-30 V-Shiff 30 + Hard Rock Coring UP : Undisturbed Piston little 101020% Somples _ TP=Test Pit A=Auger V=Vane Test 201035% some HOLE NO OW10-UT=Undisturbed Thinwall and 351050%

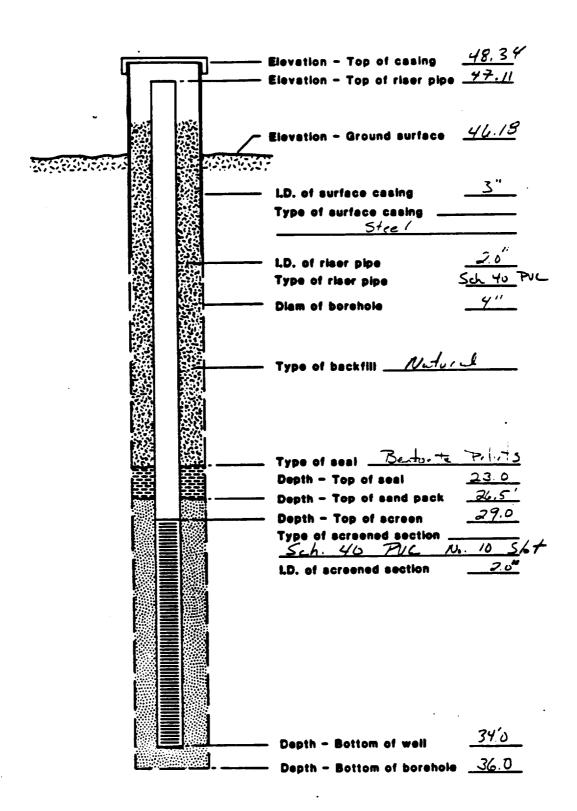
INSTALLATION REPORT MONITORING WELL No. CW-10





C		GU							., INC.		SHEET 1		of_	1_
•	170				R STREET			OVIDENCE			HOLE NO -/	\mathcal{I}_{01}	100	
T(N SCT N	ston Geophy ME Economic	Pla	nni.	e Gro		ADDRESS	Westho	m Mass		UNE & STA.			
		IT TOab									OFFET			
SA	MPLES S	ENT TOTake	n at	_S1	:		lo	UR JOB NO	86-1	63	SURF. ELEV.			
	GRO	UND WATER OBSE	RVATIC	NS			CASING	SAMPLER	CORE BAR.	1	Date		me.	
A	3'6"	ofterC.com	D., Hou	,	_			_		START	9/25/85			9.M.
					Type Size i D.		HW 4"	None	None	TOTAL HRS	9/25/85			. i m.
At _		after	Нъи	rs	Hammer	Wt.	300#		BIT	BORING FOR	EMAN _R_	Eag	WOO	<u>.</u>
					Hommer	Foli	24"			SOILS ENGA			<u> </u>	
1	OCATIO	N OF BORING						Woods						
Ŧ	Casing	Sample	Type	В	iows per 6	5"	Moisture	Strata		NTIFICATION			AMPL	
DEPTH	Blows per	Depths	of		n Sample		Density	Change	Remorks inclu- soil etc. Rock-	de color, grade color, type, cor	ation, Type of		AMP	.E
8	foot	From- To	Sample	0-€	6-12	12-18	Consist.	Elev	ness, Drilling to	ne, seams and	etc	No	Pen	Rec
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		No Sample	-	-							cription of soil h - Brown fine to w/medium to coarea			
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								35'	Patter	of Books	251	 		
]		DOLLOW	of Boring	R 33.			匚
				<u> </u>		├	ł	İ	Installed	1 0.W. @	35'	 	 	
				 		-	{	j				-	 	+-
	GROUND	SURFACE TO _	35'			USED _	4	"CASING:		stalled O	W.			<u> </u>
	omple Typ				Proportio			140 ib W1. x 3	10" fall on 2" O.D.	Sampler		SUM!	MARY	ر با ج ا
		ored W=:Washed bed Piston			troce little	0 to 10 ⁴	% (D-10 Loo	0-4	Soft 30	+ Hord Rock	Corin	•	<u></u>
		A=Auger V=Va	ne Test		some	201o35	% 3	0-30 Med. D 0-50 Den	8-15	M/Stiff Stiff	HOLE			=
U)	i = UMGiSTU/	ted Thinwall			and .	35 to 50	7 /4 4	0 + Very Do	0000 I 18-3/	T W- Coids	IMULE	NU	-nu	-10

INSTALLATION REPORT MONITORING WELL No. $\frac{W-II}{}$





		EAST PRO	OVIDENCE, R. I	DATE	_
TO Weston Geophysic	al Corporation	DORESS .	Westboro, Mass.	HOLE NO W-11	
PROJECT NAME Economic	Planning Group	OCATION	Woburn, Mass.	LINE & STA.	
REPORT SENT TO	above		OJ NO	OFFSET	
	aken at Site		R JOB NO. 86-163	SURF. ELEV.	
SAMPLES SENT TO	aken at Site	001	R JOB NO	SOME ELEV.	_

SHEET 1 OF 1

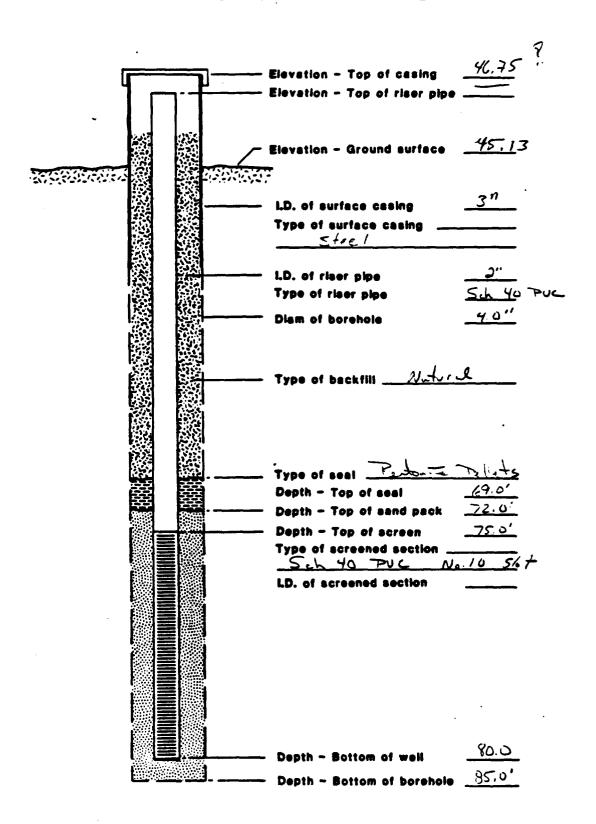
						Deta Time
GROUND	WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR.	Dote Time 8/27/85 e.m
AI4'5"	after 12 Hours	Туре	HW 4"	S/S 1-3/8"		COMPLETE 8/28/85
A1	after Hours	Size i D. Hommer Wt	300#	1-3/8" 140# 30"	BIT	TOTAL HRS. BORING FOREMAN R. EASTWOOD INSPECTOR
	 	Hammer Fall				SOILS ENGR.

\1 <u> </u>		_ ofter	Hou	rs	Size i D. Hommer Hammer		300# 24"	140# 30"		BORING FOREMAN R. INSPECTOR SOILS ENGR.	East	woo	<u>a</u>	
L	OCATIO	N OF BORING					Wood	ls						
DEPTH	Casing Blows per foot	Sample _ Depths From = To	Type of Sample	on From	Sample	r To	Maisture Density or Consist	Strata Change Elev	Remarks includes soil etc. Rock-	ENTIFICATION ude color, gradation, Type of -color, type, condition, hord- lime, seams and etc.		,	AMPLE Pen Re	
7	100.	0'-2'	D	16	13	10	Dry/m		Brown M-C	SAND & F. Sand		24"	٠	
ł		2'-4'	D	7	16	20	dense Moist	2'	F-M & COA	rse Gravel above	2	24"	ļ	
ł		41-61	D	32	15	38 62	dense Wet/v		some silt		3	24'		
						58	dense	7'6"						
						-	}	7 0			F			
		9'-11'	D	24	23	34	1 "	10'6"		e Silty SAND	4	24'		
			:						L .	e to medium SAND Sand & Gravel &				
		14*-16*	D	31	21	21 16	Wet dense		1	as above	5	24'		
								19'			E			
ŀ		19'-21'	D	24	21	19 19	"		trace of	ty fine SAND, fine gravel	6	24'		
						!	1	22'6"						
		24°-26°	D	25	27	18 14	"		SAND & fi	ium to coarse ne Sand & fine Gravel & coarse	7	24'		
						 	1		Gravel &			F		
		29'-31'	D	6	8	12 14	Wet medium dense		same	as above	8	24"	1	
		2/1 0/1					"							
		34'-36'	D	9	9	7		361			9	24"		
									1	f Boring 36' 35' Monitor Well	E			
		SHIPFACE TO	34	L	<u> </u>	USED	HW "	CASING:	THEM	S/S to 36'	<u> </u>		•	

S/S to 36' GROUND SURFACE TO USED ___HW_ "CASING: THEN SUMMARY 6 Sample Type Proportions Used 140 b Wt. x 30" fall on 2"0 D. Sampler Cohesionless Density | Cohesive Consistency D=Dry C=Cored W=:Washed Earth Boring . 01010% trace Rock Coring 0-10 Loose 0-4 Soft 101020% 30 + Hard UP: Undisturbed Piston httle 10-30 Med Dense 30-50 Dense 50 + Very Dense 4-8 M/Stiff Samples _ 201035% TP=Test Pit A:Auger V=Vone Test some 8-15 Stiff 15-30 V-Stiff HOLE NO W-11 UT=Undisturted Thinwall 351050% ond

TOWN PRESS - BAST PROV.

INSTALLATION REPORT MONITORING WELL No. $\frac{\omega-12}{2}$





	3)	GU			DR R STREET		ING.		"INC	•	SHEET 1			
T	We	ston Geophy							•		HOLE NO			
Pf	POJECT NA	ME Economi	Pla	nnir	g Gro	աբ_	LOCATION .	Wobus	n, Mass		LINE & STA.			
R	PORT SEN	IT TO	ove				PR	0J. NO			OFFSET			
\$/	AMPLES S	ENT TOTak	en et	_S11	<u> </u>	· · · · · · · · · · · · · · · · · · ·	001	R JOB NO	86=	163	SURF. ELEV.			
	GRO	UND WATER OBSE	RVATIO	NS			CASING	SAMPLER	R CORE BAI	3	<u>Dore</u> 9/17/85	<u> </u>	me	
AI_	2'1"	after Com	P. Hou	rs	Type		HW NW	s/s	None	START	2 4 2 2 4 2 =		·	9.M 9.M 7.M
					Size I D.		4" 3"	1 3/8		TOTAL HRS	3.	_		
At -		after	Hou	rs	Hommer	Wt.	300#	140#		BORING FOR	EMAN _R_	<u>Pasi</u>	<u> woc</u>	<u>1</u>
					Hammer	Foli	24"	30''		SOILS ENGR			_	
1	LOCATIO	N OF BORING					Wood	8						
Ŧ	Casing	Sample	Type		lows per (Moisture	Strata		ENTIFICATION		5	AMPL	F
DEPTH	Blows per	Depths From- To	of Sample	From	n Sample n	To	Density	Change	soil etc. Rock	ude color, grade -color, type, con	dition hard-			
٥	foot		Sumble —	0-6	6-12	12-18	Consist.	Elev	ness, Drilling	time, seams and	etc.	No	Pen	
		0'-2'	D	1_	2	1_	W/loose	j		to medium		1	24	18
		2'-4'	D	├ ,	2	-	11		of silt &	tr. mediu	m gravel	_		_
		2 -4	۲	-	1	1	1					2	24	1
•		4'-6'	D	7	13		M/m/d					3	24	10
			ļ	<u> </u>		14	ł							
			 	-	 		1							-
							1							
		9'-11'	ם	7	7	7	W/100se					4	24	174
			+	 	-	7	1							
		· · · · · · · · · · · · · · · · · · ·					1							<u> </u>
		161 161			ļ	,	ļ.,							
		14'-16'	D	3	3	4	"					5	24	12'
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		19'-21'	D	9	12	2	۱,,					_	27	।
		17 -21			-	3	1					-	24	10
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		24'-26'	D	2	3	7	,,					7	24	13
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			 	 	 		ł					 	┢	一
		29'-31'	D	3	4	7	1 "		<u>.</u>			8	24	20'
						7]							
				-			}	33'6"					├	┢
					1		; -	33 6	· · · · · · · · · · · · · · · · · · ·		04377			
		341-361		7	3	2] "		(silty)	ne to medi	um Sand,	٩	2/.	2//
			-		 	2	ł	37'	(SIILY)				├—	₩
				 	+		1	3/	Brown fin	e to mediu	m SAND.		 	
							1		tr. of si		,			
			6.	ļ		L,	 	<u> </u>						
Ç.	GROUND	SURFACE TO _	81	1	Proportio	USED :		CASING:	THEN <u>RO1</u> 10" fall on 2" 0 E	ler bit to	bottom	S) #41		
_		ored W=:Washed			trace	01010	% Cohes	ioniess Der	naity Cohesive	e Consistency	Earth	Born		
		bed Piston	-			101020	% 0	10 Loo 30 Med. D		4 Soft 30 8 M/Stift	+ Hard Rock		"T	8
		A=Auger V=Va	rie 1887			201035 35 to 50	% 30·	50 Den + Very De	90 8-1		HOLE			===
_				•	-		,	,	1		,			

		GL					ING		"INC.		SHEET 2		
											HOLE NO		
											OFFSET		
RE	PORT SE	NT TO ENT TO					PR	0J. NO	96 162		SURF. ELEV.		
54	MPLES S	EN1 10						R JOB NO	00-103		Dote		
At _	GRO	UND WATER OBS			Type		CASING	SAMPLER	R CORE BAR.	START			
					Size D.					I TOTAL HR!	s. ———		
At _		after	Hou	ırs	Hommer	Wt			BIT	BORING FOR	TEMAN		
				_ 1	Hammer	Fall				SOILS ENGA			
1	OCATIO	N OF BORING											
DEPTH	Cosing Blows	Sample Depths	Type	0	lows per (n Sample	HT .	Moisture Density	Strata Change	Remarks includ	ITIFICATION de color, gradi	ation, Type of	s	AMPL
DE	per foot	From- To	Somple	Pron	6-12	<u>To</u> 1 ;2-18	Consist	Elev	soil etc. Rock-o	color, type, col ne, seams and	t etc.	No	Pen
_	100	39'-41'	D	8	9	3						10	
		3241	1	ľ		5	j					<u> </u>	+==
]						
					<u></u>					1 (1011)			
		44'-45'	D	8	9	18	W/1008	Note:	Running sa	nd 4'8" :	inside pip	<u>e 11</u>	24
		<u> </u>		┼	 		-		Brown fine	to medi	- CAND	├	—
			+	 	 	_	1 :		w/some fin		III SAMD	-	
			1		 	<u> </u>	1		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- B			
		49'-51'	D	4	10	16	W/m/d	į į	Running sa	nd		12	24
				ļ]	1	_				
			+	↓ —	 -		ł						<u> </u>
			+	 	 	 	1	İ				 	 -
		54'-56'	D	7	11	4	"					13	24
						10							1
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		 	┵—	↓	ļ	ļ	ļ	58'6"					
		59'-61'	D	16	14	-	-	- 50 0	Very coars	e Brown	SAND &	- 47	1 27
		139 -01	10	10	 1	10	1		fine sand			14	24
į			1		1		1		silt & cob		· ·		
			1] .		i	•			
		677.751	10	7.0	h	94							
		64'-66'	D	40		26 48	l "					15	24
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]						
		69'-71'	D	19	14	23	11					12	24

2 of 3

SAMPLE

No Pen Rec. 10 24 24'

12 24 24"

13 24 16"

			_					(
		69'-71'	D	19	14	23 27	**							16	241	11'
			+	#-	+											
		74'-76'	D	19	14	23	**							17	24	4"
			1		 	27						•				
			1		-											
D: UF	Dry C=0 P=Undistui P=Test Pi	SURFACE TO pe ored W=Washerbed Piston A=Auger V=Vrbed Thinwall	đ	st	Propor trace little some and	USED tions Use 0 to 10°9 10 to 20° 20 to 35° 35 to 50	Cohes % 0: % 0: % 10:	CASING: 40 tb Wt. x 3 ionless Der 10 Loo 30 Med. D -50 Den + Very De	se ense	Cohesive (0-4 4-8 8-15	Consistent	30 + Ha	rd Roci	SUMN h Borin k Corin iples _	9	

PR	PORT SEN	•	100	WATE	R STREE	' 	EAST ADDRES LOCATION	PROJ. NO	RI		SHEET DATE HOLE NO LINE & STA., OFFSET SURF. ELEV.	W-	12	
At _	GRO	UND WATER OBSE	ERVATIO	ONS rs	Type Size I D. Hommer Hommer	Wt	CASIN	·	CORE BAR	START COMPLETE TOTAL HRS BORING FOR	s. Reman			_ }# _
DEPTH	Casing Blows per foot	Sample Depths From- To	Type of Somple	01	Sample	f	Moistu Densit or Consis	Strata	SOIL IDEN Remarks included soil etc. Rock-(ness, Drilling timess, Drilling tin timess, Drilling timess, Drilling timess, Drilling timess, Dril	color, type, cor	ndition, hard-	_	AMP	Rec
		79'-81' @85'		60	123	24_	₩/v/d	1 1	Roller bit Bottom Installed	of Borin	_	18		3"

GROUND SURFACE TO USED "CASING: THEN 1401b Wt.x 30" fall on 2"0 D. Sampler esionless Density | Cohesive Consistency Sample Type Proportions Used SUMMARY: Cohesionless Density | Earth Boring . D=Dry C=Cored W=Washed 01010% trace 0-10 Loose 10-30 Med. Dense O-4 Soft 30 + Hard Rock Coring _ 101020%

30-50 Dense 50 + Very Dense

4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff

Samples _

HOLE NO W-1

httle

some

and

201035%

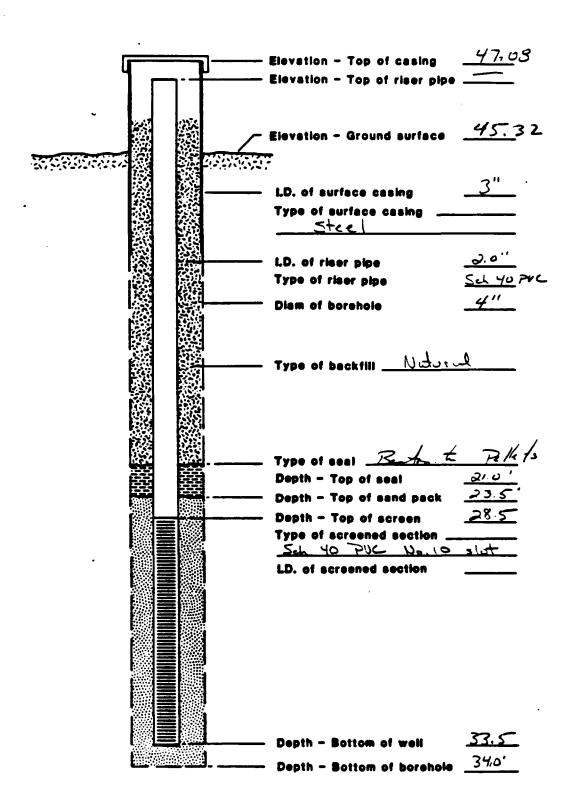
351050%

UP = Undisturbed Piston

UT=Undisturbed Thinwall

TP=Test Pit A=Auger V=Vane Test

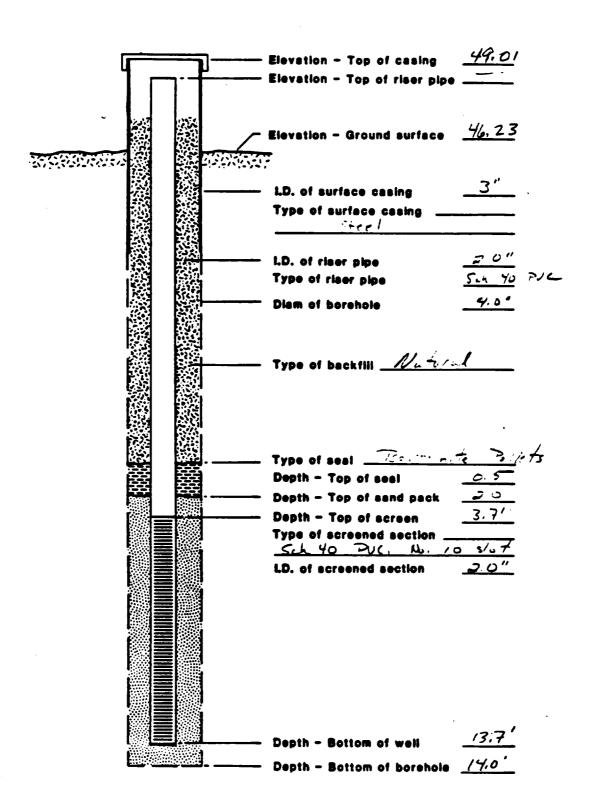
INSTALLATION REPORT MONITORING WELL No. 50-12



(6)

100 WA					R STREE	7	EAST PROVIDENCE, R. I.				DATE				
TO Weston Geophysical			Cor	p	(TO Mass	HOLE NO. SW-12						
PROJECT NAME Economic Plant				mnic	g Gro	up			n, Mass			LINE & STA.			
REPORT SENT TO						PROJ. NO				OFFSET					
SAMPLES SENT TO					-		OUR JOB NO		86-1	63					
		UND WATER OBSE		•			CASING	SAMPLER	CORE BAR.	START	<u>Dara</u> -9/19/8		me		
At ofter Hours			' '\$	Type Size i D.		HWNW	S/S		COMPLETE 9/19/R5 TOTAL HRS. BORING FOREMAN R.			\$3			
						4"3"	1 3/8"	· -							
A1		_ Orrer	700	"	Hommer Hommer		300# _24"	<u> 140#</u> 30''	BIT	INSPECTOR .				<u> </u>	
				1						30123 25001					
_		N OF BORING			_==			Woods				=		==	
Ξ	Casing Blows	Sample ~ Depths	Type		ows per (Moisture	Strata	SOIL IDEN	ITIFICATION	tion. Type of	5	AMP	LE	
DEPTH	per	From - To	Sample	e		<u>ro</u>	Density or	Change	soil etc. Rock-(color, type, condition, hard- me, seams and etc.		No Pen Re		Γ.	
	foot			0-6	1 6-12	12-18	Consist.	Elev.	ness, Uraling til	ne, seams and	etc.	No	Pen	Rec	
				-	<u> </u>			:				<u> </u>		 	
		No Samo]]				┝	┼─-	}	
		NA SAMP					1		General d	escriptio	n of soil	_	 	┢	
								l I	from wash	- Gray f	ine to				
			 -	├	├─-	 		1	medium S	AND, fine	to _		<u> </u>	<u> </u>	
			 	-	 		1		medium Gr	ravel, tra	ice of	-	╁─╴	┢	
									BIIL				\vdash	┢	
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]								
					 	<u> </u>		34'					 		
					-	 	1		Bottom of Boris Installed O.W. @ 35		ig 34'		┼─	 	
											31	—		┢	
]			Installed O.W. G as					
			<u> </u>				1								
	GPCI INC	SUPERCE TO	34.1	L	L	USED_	<u> </u>	CASING:	THEN Insta	lled O.W.				<u> </u>	
	GROUND SURFACE TO 341 USE proportions								0"fall on 2"O.D. :		·	SUM	MARY	— r:	
D=Dry C=Cored W=Washed trace C						01010	% Cohes	ionless Deni	sity Cohesive (ive Consistency . Earth Baring					
		bed Piston A=Auger V=Va			10 to 20'	79 L 10.	-10 Loos -30 Med. De		Soft 30 M/Stiff	+ Hard Rock		۳ _			
		A:Auger V:Vo	ISSI		some	201035'	⁷⁰ 30	-50 Dens			LIOU E				

INSTALLATION REPORT MONITORING WELL No. 4\omega-13



PR	OJECT NA	eton Geophy AME Economic To about 10 Take	100 V sical Pla	VATEI Cor nnin	STREE	T -	EAST PR ADDRESS LOCATION	OVIDENCE West be Wobus	n, Mass		SHEET_1 DATE HOLE NO LINE & STA OFFSET SURF. ELEV
At _	GRO	UND WATER OBSE	RVATIO	NS 's	Type Size i D. Hommer Hammer	Wt.	CASING HW 4" 300# 24"	SAMPLER		START COMPLETE TOTAL HRS	I. Eman <u>R</u>
рертн	Casing Blows per foot	N OF BORING Sample Depths From - To	Type of Sample	Or From	ows per (Sample	r To	Moisture Density or Consist.	Strata Change Elev.	SOIL IDEN Remarks include soil etc. Rock-e ness, Drilling tin	color, type, con	idition, hard-
		No samples						- 4°-0" 7°-6"	General de soil from Brown fine Gray fine Very coars gravel & s	SAND, fire Brown	race silt
								14*-0"	Bottom of Installed well 18	2" PVC M	

_ OF _1

OW-13 ●

Time

Eastwood

SAMPLE

No Pen Rec.

GROUND SURFACE TO THEN installed well USED __ "CASING: Somple Type 140tb Wt. x 30" fall on 2"0.D. Sampler Earth Boring 14 " Proportions Used D=Dry C=Cored W=Washed Cohesionless Density | Cohesive Consistency 01010% troce 30 + Hard Rock Coring _ 0-10 Loose 0-4 Soft UP = Undisturbed Piston 101020% little

10-30 Med. Dense 30-50 Dense 50 + Very Dense

4-8 M/Slift 8-15 Stiff 15-30 V-Stiff

Samples _

HOLE NOW-135

TP=Test Pit A=Auger V=Vone Test

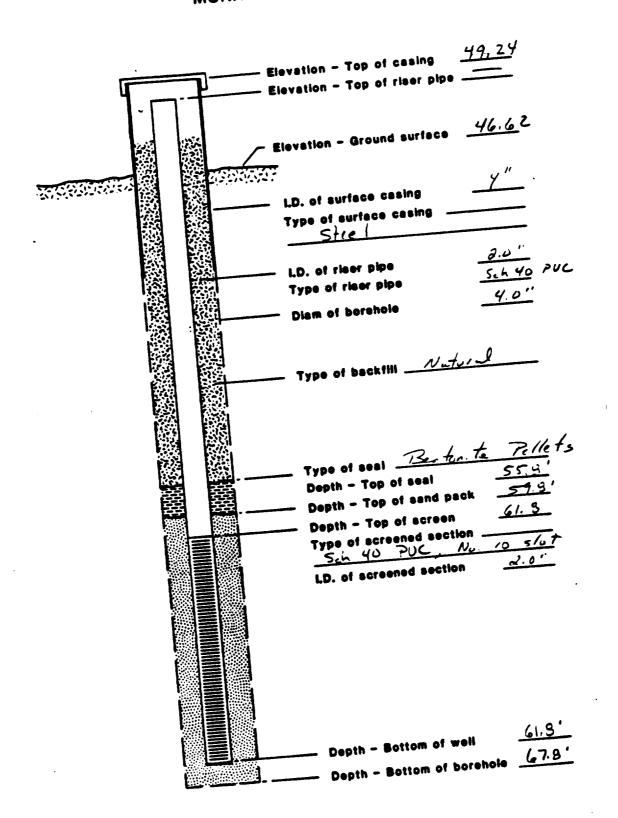
some

ond

201035%

351050%

INSTALLATION REPORT MONITORING WELL No. $\frac{W-13}{2}$





GUILD DRILLING CO., INC. 100 WATER STREET EAST PROVIDENCE, R I.

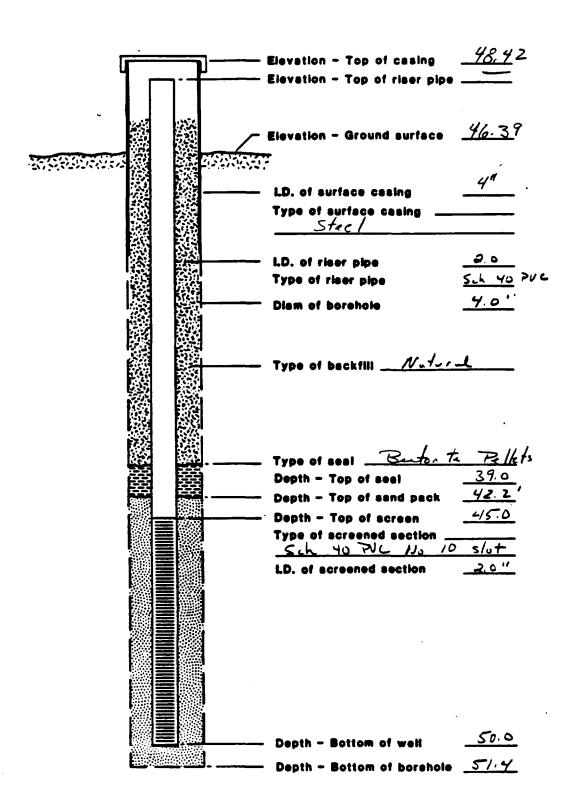
TC	We	ston Geophy	aical	Cor	D	1	ADORESS	Westho	TO Mass		HOLE NO		_		
	PROJECT NAME Economic Planning Group										LINE & STA.				
		NT TOab					PROJ. NO				OFFSET				
54	MPLES S	ENT TOTak	en_et	Sit					86-1	63	SURF. ELEV.				
	CBO	UND WATER OBSE	BUATIO	ALC T							Date	Yi	me .		
1			•				CASING	SAMPLER		START	10/10/85			9.M	
A4 _	At 3 = 9 after COMD Hours Type				HW NW	<u>s/s</u>	NV-II	COMPLETE	10/14/95			13			
i	Size i D				4" 3"	1-3/9	" 2-1/8"	TOTAL HRS	B						
AI _	At Ofter Hours Hommer Wt			Wt	300#	140#	BIT	BORING FOR	TEMAN _R_	Eas	<u> </u>	7			
				- 1	Hommer	Fall	24"	30	_ Diamond	SOILS ENGA					
	OCATIO	N OF BORING												===	
 '												=			
Ξ	Casing Blows	Sample Depths	Type		ows per 6		Moisture	Strata	SOIL IDEN Remarks include	NTIFICATION	ntion Two of	S	AMPL	Æ	
DEPTH	per	From - To	Somole	From		Ta _	Density	Change	soil etc. Rock-	color, lype, cor	rdition, hard-	├			
L	foot	710.113 10	P 0.00	0-6	6-12	12-18	Consist.	Elev.	ness, Drilling til	ne, seams and	detc.	No	Pen	Rec	
Dro	ve	0'- 2'	D	3	3	4			Brown medi	um to fin	e SAND,	1	24"	24"	
	Tu			4			1	1	Trace silt						
ca	ing	2'- 4'	D	4	4	6	1			•	-	2	24"	15"	
Sp		ļ		5_		 		4'-0"							
NW	3"	41-61	D.	9	12	6	4		Gray fine	_	ce silt	_3_	154,	10"	
	ing		├	8_	 		ł		& fine gra	vel		<u> </u>		<u> </u>	
1	 		 	 	-	1	1					-	 	 	
			 	 	 	 	<u> </u>	8'-6"				┢╾	\vdash	┝	
į.		9'- 11'	D	48	51	49	1		Gray very	coarse SA	MD &	4	24"	13"	
•		7		47			1	1	gravel						
•]								
i]								
		14'-16'	D	40	17	25	1					5_	24"	14"	
		<u> </u>	ļ	24	<u> </u>	}	4								
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 	C80: 12:2	391		sal		1,000	<u>)</u> 14	'exerce	BOULDERS THEN C to	67'-6"		μυ	10	<u> </u>	
	GROUND omple Tyl	SURFACE TO			Disser		4 & 3					E1 14 44	4.65	-	
_		pe ored Walkoshed		Ī	Proportion trace	ons Us OlolO'		inuio W1.23 sionless Der	10"fall on 2"0 D.	Sompler Consistency	Earth	DUMI Barr	MARY TO 5	2'6"	
		bed Piston				10 10 20	% 0	·IO Loc	0-4	Soft 30	+ Herd Roci	Cori			
		A:Auger V=V0	ne Test	1		201o35	ا اره	-30 Med. D -50 Den		M/Stiff		D.44		==	
l u	T = Undistu	red Thinwall				35 to 50		+ Very Do	ense 15-30	Stiff V-Stiff	HOLE	NO	OW-	-13-	

TO	_

GUILD DRILLING CO., INC.

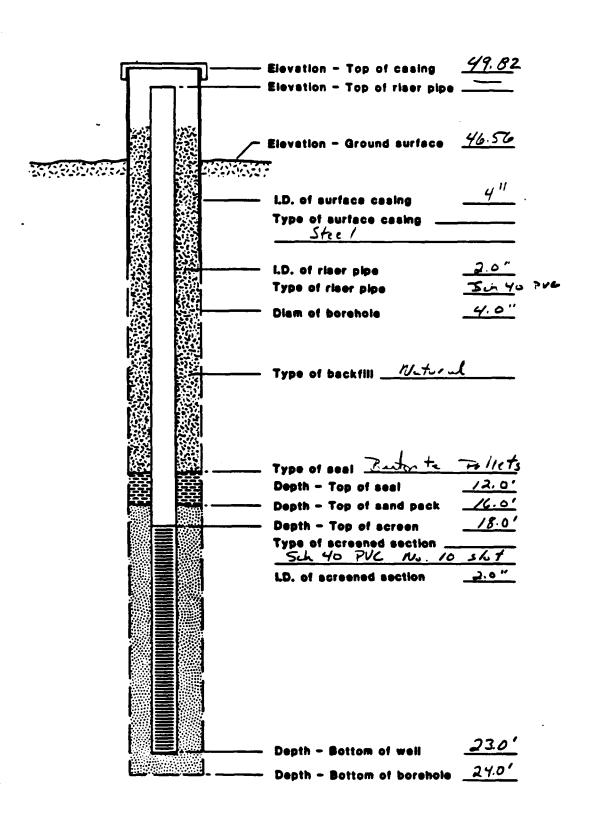
	3	GU							, INC.	ł	SHEET		
7	Wes	ton Geophys		-	STREET		EAST PRO		•		HOLE NO.		} - }
PR	OJECT NA	ME Economic	. P1.	nnin	g Gro	ար_	OCATION -	Wohu	m. Mass		UNE & STA		
		IT TOabc									SURF. ELEV.		
										<u> </u>	Dore	Time	\exists
•	GROU	IND WATER OBSE		í			CASING	SAMPLER	CORE BAR.	START			- 5.5
AI_		after	Hou	' ³	Type		HW 4"		. ——	COMPLETE			_\$75
At .		_ after	Hou	rs	Size i D Hommer	WI.	300#		BIT		EMAN _R_	Zastwo	مط
					Hammer	Fall	24"			SOILS ENGA			
	OCATIO	N OF BORING											
Ŧ	Casing Blows	Sample Depths	Type		ows per (Sample		Moisture Density	Strata	SOIL IDEN	ITIFICATION	tion. Type of	SAME	A.E
DEPTH	per foot		Somple	From	6-12	To	or '	Change Elev.	sail etc. Rock-iness, Drilling tin	color, type, con	dition, hard-	No. Per	Jee
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					 	 -			boulders	44° to 51	L • • • • • • • • • • • • • • • • • • •		╂╼┨
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1									D-33 34.		. 9		
		@ 54 *	Refu	sal	-roll	er bi	F		Roller bi	t through to 55'-9"	poulder		╂╌┫
		56'-56'-6'	D*	61					Gray very			12 6	6"
	-	@57'6" re	fusa	L W/	roll	r bi	min/ft	57'-6"				C1 60	11 1,0
		57 '6"- 62 ' 6"					5		Very mass				43
					 		5 5 4 2	•	Quartz &		Z WIOH	 -	+
		62'6"-	C				5		@61'-3" s	eam - lost	t 90% of	C2 60	48
		6716"					5 5 5 5 5		water			┝╌┼╌	+
							5						
							5	67'-6"					-
									Bottom of	Boring 67	'-6"		
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									70° Mon	itor Mett	- 2 PVC-		
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		SURFACE TO		<u> </u>	_	USED_		CASING:	THEN				_
	Ory C:Co	ored Walkonhed			Proportion trace	005 Use 01010		40/b Wf. x 3 signless Der	10" fall on 2"0 D. Naity Cohesive	Consistency	Earth	SUMMAR Borng _	
U	2 Undistur	bed Fision	T o	1	kittle	10 10 20	% 0		0-4			Coring _	
		A:Auger V:Val bed Thinwall	re 1661			201035 ¹ 351050	% (30 ·	-50 Den + Very D	99 8-15		نستنسلس	NO.OW	-13-1

INSTALLATION REPORT MONITORING WELL No. <u>Cw-13</u>



16	7 /	GU							., INC.		30661		o + .	4
~							EAST PR	HOLEHO 3	767 1	2 4				
		ston Geophy						LINE & STA.						
							LOCATION Woburn, Mass				OFFSET			
S/	MPLES S	ENT TO Tak	an at	S11			a	JR JOB NO	86-1	63	SURF. ELEV.			
											Date	Tir	ne	
		UND WATER OBSE					CASING	SAMPLER	R CORE BAR.	START	10/16/85		_	9.m
A' -	34.	ofter COE	112 Hou	75	Туре		HW			COMPLETE				333
		4		·	Size i D.		4"		-	TOTAL HRS	3. IEMAN <u>R</u>	P		- 1
A1 -		_ after	Hou	irs	Hommer Hommer		300# _24"		- BIT	INSPECTOR				
<u> </u>					nommer	ruii				SOLS ENON			_	=
		N OF BORING	1 -		_==							==		
E	Casing Blows	Sample Depths	Type		iows per l		Moisture	Strata	SOIL IDEN Remarks inclu	ITIFICATION	ation Tune of	S	AMPL	E
DEPTH	per		Samole	Fron	n	To	Density or	Change	soil etc. Rock-	color, type, cor	dition, hard-		_	
L	foot			.0-€	6-12	12-18	Consist.	Elev.	ness, Drilling tir			No	Pen	Rec
		No sample	5	├	 	ļ —	ł		General des	scription	of soil	\vdash		
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	GROUND	SURFACE TO	501			USED .	1.	"CASING:	THEN insta	lled well				
	omple Typ			1	Proporti				10" fell on 2"O D.	Sompler	1_	SUMM	ARY	
		ored W= Noshed bed Pision			troce little	0 to 10°0	70 I	sionless Der I-10 Loo		Consistency Soft 30		Boring		
		A=Auger V=Va	ne Test			201035	0 10	-30 Med. D	ense 4-8	M/Stiff	Same	ies _		
		bed Thinwall		1		351050	∷)-50 Den) + Very De	se 8-15 ense 15-30	Stiff V-Stiff	HOLE	NO	OWl	3-C

INSTALLATION REPORT MONITORING WELL No. $\underline{S}\underline{\omega}$ -13



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GUILD DRILLING CO., INC.

100 WATER STREET

EAST PROVIDENCE, R I

	J., CC OF
	DATE SLJ-13
	HOLE NO. CHE-M
	LINE & STA.
	OFFICET

TO Weston Geophysical Corp. ADDRESS Westborn, Mass	HOLE NO
PROJECT NAME Economic Planning Group LOCATION Woburn, Mass	LINE & STA.
	OFFSET
REPORT SENT TO PROJ. NO PROJ. NO SAMPLES SENT TO Taken at Site OUR JOB NO 86-163	SURF. ELEV.
SAMPLES SENT TO LEAST SECTION OF THE	

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	START	0010 10/18/85	Time e.m
Ar Not recordedofer Hours	Type Size i D	HW 4"			COMPLETE TOTAL HRS	10/19/95	
At After Hours	Hommer Wt	300# 24"		BIT	BORING FOR INSPECTOR SOILS ENGR		Castwood

LOCATION OF BORING Type Moisture Casina Sample Blows per 6" SOIL IDENTIFICATION Strata SAMPLE Depths on Sampler Remarks include color, gradation, Type of Blows of Density Change soil etc. Rock-color, type, condition, hard-Def From - To Somple No Pen Rec ness, Drilling time, seams and etc. 0-6 6-121 12-18 Consist Elev. foot 0'- 2' 1 24"14" D Dark brown coarse to fine 2 21-0" SAND, some silt 21-41 2 D 2 3 2 24"15" Brown medium to fine SAND. 6 3'-6" some fine gravel 41-61 D 14 10 12 21.1121 Gray fine SAND, trace silt 18 30 <u>61- 81</u> D 18 20 24"19" 8"-0" 32 8'- 10' ח 24 39 35 24 119" Gray-brown medium to coarse 39 SAND & gravel, some silt 21 22 10'-12' ם 30 24118" <u>36</u> 31 12'-14' D 24 17" 49 14'-16' 20 14 15 ם 12419 13 161-04 Gray-brown fine to coarse SAND, some fine to coarse gravel & silt 25'-0" Bottom of Boring 25'-0" Installed 2" PVC Monitor Well

Sample Type D: Dry C: Cored W: Washed UP = Undisturbed Piston TP=Test Pit A=Auger V=Vone Test UT=Undisturbed Thinwall

USED Proportions Used frace 01010% 10 to 20% httle: 201035% some and 351050%

THEN Installed well CASING: 1401b W1.x 30" fall on 2"0.D. Sampler Cohesionless Density | 0.10 Loose 10-30 Med. Dense Dense

50 + Very Dense

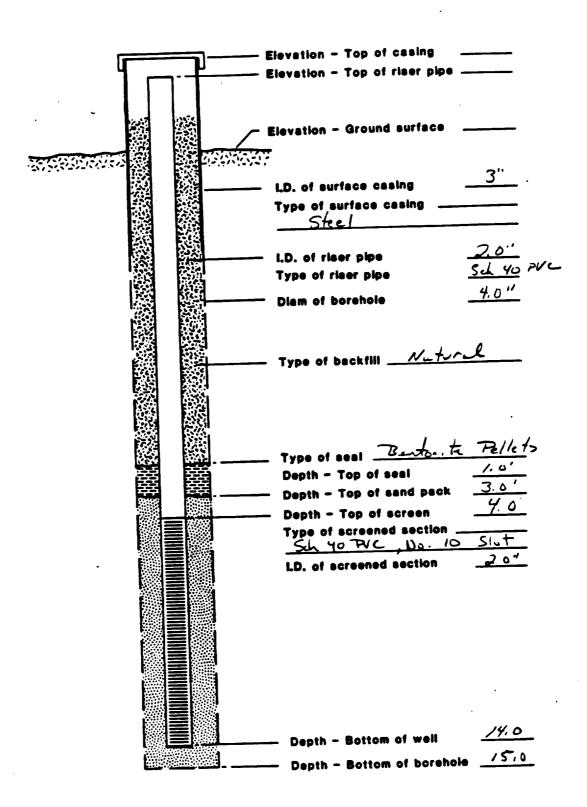
Cohesive Consistency 0-4 Soft 30 + Hord 4-8 M/Stiff 8-15 Shiff 15-30 V-Stiff

SUMMARY: Earth Borng 25" Rock Coring Somples_

HOLE NOOMB-M

GROUND SURFACE TO

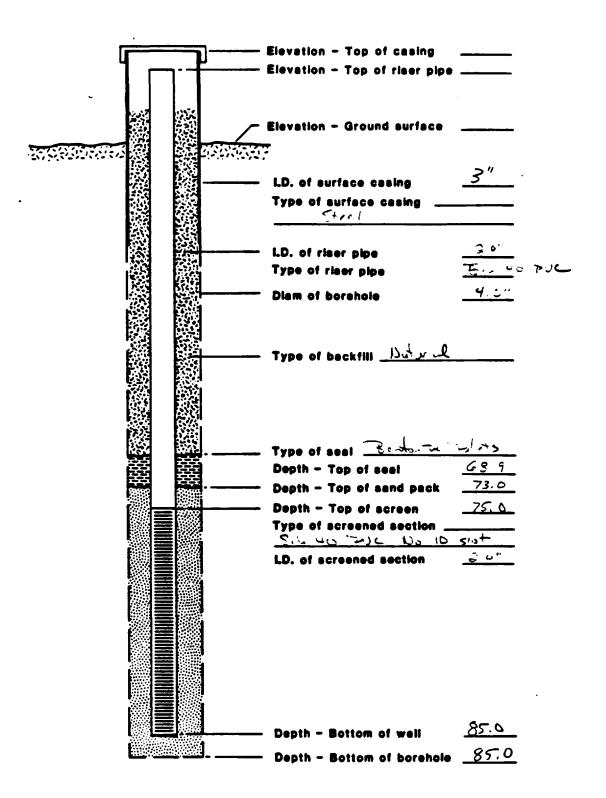
INSTALLATION REPORT MONITORING WELL No. <u>GW-1</u>4



TO PR RE SA	Wes OJECT PORT S MPLES
	G
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PR	OJECT NA	GU on Geophysic the Economic it toabc ent toTa	100 W al Co Plant	ATER	STREET Pation Group		EAST PR ADDRESS LOCATION	OVIDENCE, West Wobus ROJ. NO.	oro, Mass		SHEET_1 DATE _DLA HOLE NO LINE & STA OFFSET _ SUMF. ELEV	<i>J-14 Prox</i>	•	
A	GRO	UND WATER OBSE after Ground	RVATION Hours	IS	Type Size I D. Hammer Hammer	Wt.	CASING HW 4" 300# 24"	SAMPLER NONE	CORE BAR.	START COMPLETE TOTAL HR BORING FOI	S. REMAN _B	85 85		_
l	OCATIO	N OF BORING				Swa	mp - Dr	ove HW c	asing					
DEPTH	Casing Blows per foot	Sample Depths From- To	Type of Somple	on Erom	Sample:	r Ta	Maisture Density or Consist.	Strata Change Elev	SOIL IDEA Remarks inclu- soil etc. Rock- ness, Drilling tir	color, type, co	ndition, hard-	'	AMPI Pen	Rec.
		No Sample						15'	trace of	h - Brown silt	ng 15'			
o.	iomple Ty Dry C=(P=Undistu	SURFACE TO pe Cored W=Washed rbed Piston r A=Auger V=Ve			Proporti trace sittle some	USED ons Us O to 10 to 20 20 to 32 20 to 32	19% Coh		ense 4-8	Consistency	O + Hord R	orth Bar	ng _	15'

INSTALLATION REPORT MONITORING WELL No. W-14





GROUND WATER OBSERVATIONS

GUILD DRILLING CO., INC.

	100 WATER STREET	EAST PROVIDENCE, R. I.	DATE
To Weston Geon	nusical Corporation	ADDRESS	HOLE NO. W144
		LOCATION Woburn Mass	LINE & STA.
	above		OFFSET
	Taken at Site	l i i i i i i i i i i i i i i i i i i i	SURF. ELEV.
COO HID WATER	OBSERVATIONS		Date Time

SAMPLER

CASING

CORE BAR.

START

SHEET ____ OF _3

SUMMARY 70

Earth Boring _

HOLE NOV14-D

Samples _

30 + Hard

Rock Coring 5 15 Samples

11/8/85

			•		Hammer Hammer	Fall	300# 24"	140# 30"	<u>Dia.</u>	BORING FOREMAN R F INSPECTOR SOILS ENGR.		100	d
	OCATIO	V OF BORING				Swa	mp - Dro	ve HW	casing				
UEP1H	Casing Blows per foot	Sample Depths From - To	Type of Sample	on From		r Го	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type o soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc.		<u> </u>	Pen	
7		0'-2'	D	ī	1	1	W/loose			organic PEAT 10"	ī	24"	-
		21-41	D	ı	2	5	"			SAND, tr. of silt SAND, tr. of silt	2	24"	20
		41-61	D	6	9		W/m/d		1		3	24"	16
		9'-11'	D	1	2	3	W/loose				4	24"	1 4
			:			2							F
													F
		14'-16'	ρ	2	3	4	"				5	24"	1 9
		19'-21'	D	1	3	5					6	24'	17
ł						9							t
		24'-26'	D	3	5	5				•		24'	Ļ
						4	1				É		Ë
												-	F
-		29'-31'	D	9	14	16 14	W/mp/d		Brown fine	SAND, tr.silt	8	24'	1
Ì]						F
		34'-36'	D	4	7	12	"				9	24	I
						18		37'		· · · · · · · · · · · · · · · · · · ·			E
}							}			e brown SAND & & cobbles, silt			F
_							1		8-2	,		1	t

Proportions Used

trace

fittle

some

ond

01010%

101020%

201035%

351050%

0-10

1401b Wt.x 30"fall on 2"0 D. Sampler

0-4 Soft

4-8 M/Stiff

8-15 Stiff 15-30 V-Stiff

Cohesionless Density | Cohesive Consistency

Loose

10-30 Med. Dense

30-50 Dense 50 + Very Dense

TP=Test Pit A=Auger V=Vone Test

D=Dry C=Cored W=Washed

UP=Undisturbed Piston

UT=Undisturbed Thinwall

Sample Type

G
TO -
PROJ
REPO
SAMF

DRILLING CO

	GUILD DRILLING CO., INC.	SHEET 2 OF 3
39	100 WATER STREET EAST PROVIDENCE, R I	HOLE NO. W14
		HOLE NO. W144
OJECT NAME _	LOCATION —	LINE & STA.
	PROJ. NO	OFFSET
MPLES SENT TO	OUR JOB NO86-163	SURF. ELEV.

	GRO	UND WATER OBSE	RVATIO	NS			CASING	SAMPLER	CORE BAR		Dote	Yi	m e	
At _	- 	after	Hou	·s	Туре					START		_		
				i i	Size i D.					TOTAL HRS.		_		_ j.m
A1 _		ofter	Hou		Hommer	Wt			BIT	BORING FOREI	MAN			
	·				Hammer	Fall				SOILS ENGR.				
L	OCATIO	N OF BORING												
I	Casing	Sample	Туре	Bi	ows per 6	5''	Moisture	Strata	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard-		_	,	AMP	F
DEPTH	Blows per	Depths	of	F	Sample	r To	Density or	Change			<u> </u>	- INIT (-	
۵	foot	From- To	Somple	0-6	6-12		Consist.	Elev	ness, Drilling tin	Oriting time, seems and etc.				Rec
		39'-41'	D	60	93	27	W/m/d	1	ery coarse	brown SAN	brown SAND &		24''	13"
						14]	1 1	gravel & c	obbles, si	1t			
							1			•				
		111 161	 	F0	21	_				_				
		44'-46'	P	52		12	W/m/d		Brown mediu			۳-	24"	8
								l 1	gravel, som	e siit a c	ODDIES	 	-	
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] ,,							
		49'-51'	D	16	8	17	{ "	1 1				12	24"	8"
			 		 	23	1					-		-
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		541-561	D	6	6	22	"					13	24"	8''
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		<u> </u>			 		İ	1				-	┝	-
		59'-61'	ם	5	10	13	W/m/d					14	2411	11"
						23								
		· · · · · · · · · · · · · · · · · · ·			<u> </u>]						
						<u> </u>		641				 	ļ <u>-</u>	
		64'-65'6"	D	120	*49	* 19			Very dense				18"	10"
·			-			<u> </u>	ł	1	SAND & grav	el & silty	Glacia	 		
					 	 	1	{	Till			-	-	-
			 				1							\vdash
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	**	70'-75'	С				4	1				C1	5'	51
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		75'-80'	С] $\frac{7}{5}$!!				C2	51	51
							51/2	1 1		•				
							44							
			 				4 4 5 51 41 5 5					—	 	
	GROUND	SURFACE TO	L	L	L	USED _		CASING:	THEN			<u> </u>	<u></u>	Щ.
	imple Typ		<u> </u>	1	Proportio	_			O"fall on 2"O D.	Somoler	1	SUMN	MARY	-

Sample Type D:Dry C:Cored W:Washed UP = Undisturbed Piston

01010% trace little 10 to 20% 201035% some 351050% ond

140 lb Wt.x 30" fall on 2"0 D. Sampler Cohesionless Density | Cohesive Consistency 0-10 Loose 10-30 Med. Dense 30-50 Dense 50 + Very Dense

0-4 Soft 30 + Hard 4-8 M/Stiff 8-15 Stiff 15-30 V-Stiff

SUMMARY: Earth Boring Rock Coring Samples .

HOLE NOW14-D

TOWN PRESS - BAST PROV.

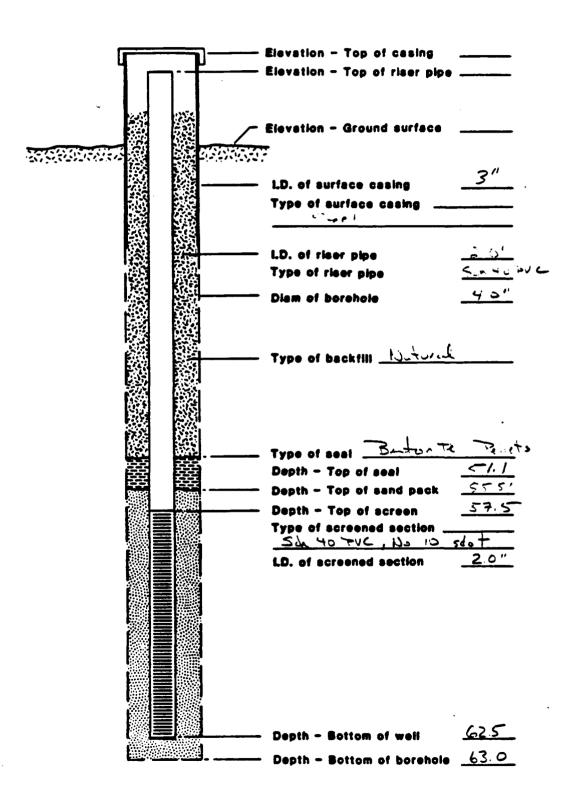
UT=Undisturbed Thinwall

TP=Test Pit A=Auger V=Vone Test



PR	PORT SE	AME	100 \	WATE	R STREE	<u> </u>	EAST PR ADDRESS LOCATION ——— PF	OVIDENCE			DATE HOLE NO LINE & S OFFSET SURF. EL	D	W14	4.	
GROUND WATER OBSERVATIONS At after Hours					Туре		CASING		······································	START	Date		_		
A1 _	At ofter Hours					W1 Foll			BIT	COMPLETE TOTAL HRS. BORING FOREMAN INSPECTOR SOILS ENGR.					
1	OCATIO	N OF BORING	<u>:</u>												
DEPTH	Casing Blows per	ng Sample Type					Moisture Density or	Strata Change	SOIL IDENTIFICATION Remarks include color, grad soil etc. Rock-color, type, co		ation, Type of				
_	foot			.0-€	6-12	12-18	Consist.	Elev.	ness, Drilling fin			N	o Pe	n Rec	
		80'-85	C				5 5	,	Pecomposed nassive Gab	brodiorit	e inte	-z- C	1 5	1 51	
							5 5		bedded w/Gn	eiss &. Qu	artz	E	\pm	1	
			+			 		 	Bottom	of Boring	. 051		┿	+	
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So	mpie Typ			1	Proporti	USED_	d	"CASING: 140lb Wt. x 3	THEN 10"fall on 2"O.D. :	Sompler	1		MMAF		
		ored W=Woshe	đ		froce	01010	, u	sionless Dei 1-10 Loo	nsity Cohesive			Earth Bo Rock Co			
		bed Piston . A=Auger V=V	one Test	1	little some	10 to 20'	70 IO	-30 Med. D	ense 4-8	M/Stiff	1	Samples			
		bed Thinwall				35 10 50)-50 Der)+ Very D	ense 8-15 15-30	Stiff V-Stiff	HC	DLE N	10.		

INSTALLATION REPORT MONITORING WELL No. CW-14

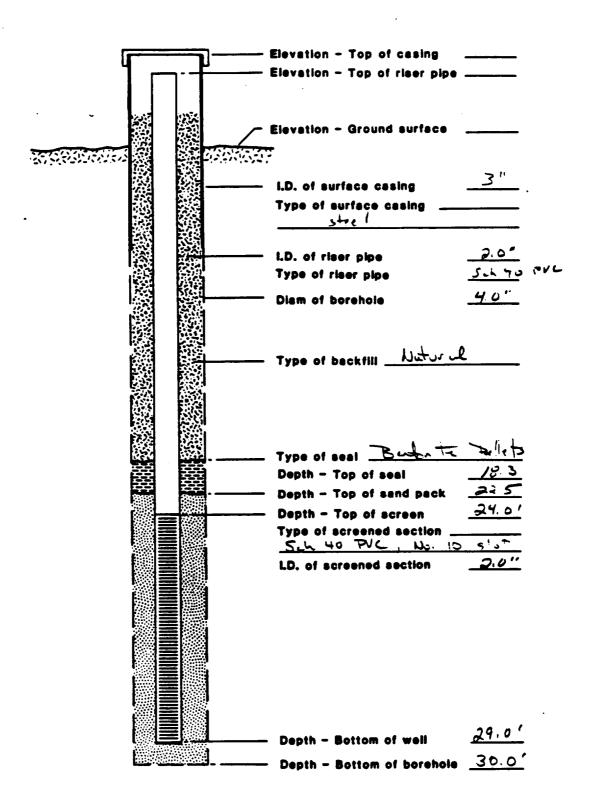




GUILD DRILLING CO., INC.

		GU			DR R STREE				CO.	"INC.		SHEET 1			
70	West	on Geophysic					_	_				HOLE NO.	-W1	-0	
PR	OJECT NA	ME Economic	Plan	ning	Grou	p	LOCATIO	N _	Wobu	rn. Mass		UNE & STA.			
RE	PORT SEN	IT TO		1450	-]	PRO	J. NO	96 163		OFFSET				
SAMPLES SENT TO Taken at Site								OUR	JOB NO	Vu-10		Dere		me.	
	GRO	UND WATER OBSE	RVATIO	NS			CASING	3	SAMPLER	CORE BAR	START	11/14/85			e.m
	p of g	ofter	Hou	'*	Туре		HW		NONE		COMPLETE	11/14/85			- P.M S.M - A.M
	•		ш.	_	Size I D.		4" 300#	_			TOTAL HR	B. Keman <u>R</u> E			- •
A1 -		_ ofter	— <u>,</u> 60	"	Hommer	***	24"	-		- BIT	INSPECTOR				_
LOCATION OF BORING: Swamp - Drove HW casin											Taoles Char			_	
	Course Sample Tree Blows one 6" Maintena Course DENTESTATION														=
DEPTH	Blows	Depths	of	01	n Sample	r	Density		Strata	Remarks inclu	ation, Type of	SAMPLE			
DEI	per foot	From- To	Sample	From	6-12 i2-18		Or Consist		Chonge Elev.	soil etc. Rock- ness, Drilling ti		No	Pen	Rec	
		No Sampl	es -							General de		of co11	_		_
]	-			om wash	OI BOIL			
		· · · · · · · · · · · · · · · · · · ·	 		-	 	{	- 1		:	•				
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	GROUND	SURFACE TO _	631	L	<u> </u>	USED _	4		ASING:	THEN Ins	talled O.	W	<u> </u>	<u> </u>	┸-
Sc	omple Typ	<u>)e</u>		Ī	Proporti	_	ed	14	Ob W1. 1 3	0" fall on 2"O D.	Somoler	1	SUM		ــ اند عا
	•	ored W=Washed bed Piston			froce	01010	<u>′</u> • 1	rhesid O-1	onless Den	sity Cohesive	Consistency	1 =	Borr	• —	<u>' 60</u>
		ped Piston A:Auger V=Va	ne Test			10 to 20' 20 to 35'	٥/ ا	10-3	SO Med D	ense 4-8	M/Stiff	Som	oles .		<u> </u>
		bed Thinwall	1		35 to 50	1	30-5 50 +	Very De	se 6-15 Inse 15-3	5 Stiff O V-Stiff	HOLE	NO	W14	,-C	

INSTALLATION REPORT MONITORING WELL No. SW-14



FC.	3)	GU							., INC.		SHEET_1			1
V					R STREE			PROVIDENCE	•		HOLE NO.	LTT /	_	
TO	West	n Geophysic	al C	orbo	PALIO	a _	ADDRES	s Wes i	tboro, Mass		LINE & STA.			
		ME Economic									OFFSET			
		IT TOabc									SURF. ELEV.			
SAMPLES SENT TO Taken at Si							!	OUR JOB NO	- An-In-3		Dare			
	GRO	UND WATER OBSE	RVATIC	WS.			CASING	SAMPLE	R CORE BAR.				m e	
At_		after	Hou	rs	Туре	•	HW	NONE		START	11/15/8	5 p.m.		
T	op of C	Ground			Size I D.		4"			COMPLETE	B			
At _		_ ofter	Hou	rs	Hommer		300#		BIT	BORING FOR	EMAN R. P	- twood		
			•		Hommer	Fall	24"			SOILS ENGA				
1	OCATIO	N OF BORING	-			Sve	mp -]	Drove HW	casing					
=	Casing	Sample	Type		lows per (Moisture			NTIFICATION		声		
DEPTH	Blows	Depths	of	٥	n Sample		Density	Strate	Remorks inclu	ation, Type of	S	AMP	LE	
DEF	per	From - To	Somple	Fron	6-12	10	Or T	Charge	soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc.				Baa	Rec
	foot			0-6	9-12	12-18	Consist.	Elev				.,,	780	NAC
		No Samples	-	-			i					-	├─┤	-
		NO SAMPIES			1	Ì	1		General de	scription	of soil			\vdash
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_		SURFACE TO _	_30'		•	USED _		_"CASING:	THEN	Installe	d 0.W.			-
_	Dry C.C	ored W=Washed			Proportion trace	ons Usi OtolO ⁰		140lb W1.x3 hesionless Dec	50"fall on 2"0 D. nsity Cohesive	Sampler Consistency	Forth	SUM! Barin	MARY	, 30 '
UF	• Undistur	bed Piston				10 10 20	'U]	0-10 Loc	0-4	Soft 30	+ Hard Rock	Corin		
		A=Auger V=Va	ne Test		some	201035	%		150 8-15	M/Stiff Stiff	Som	ples _	1,74	
U	T= Undistur	bed Thinwall		1	ond	35 to 50		50 + Very D		V-Stiff	HOLE	NO	. W 1	r⇔⊸M

UT=Undisturbed Thinwall

INSTALLATION REPORT MONITORING WELL No. 64-9

